REFERENCE

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A Best Practice Framework for Training UK Construction Site Managers

Padzil Fadzil Hassan

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ABSTRACT

Training has long been recognised as one of the fundamental processes to assist the UK construction industry meet the increasing the demand for adequately trained and qualified construction site managers. However, inadequate commitment by organisations to training, coupled with the recognised fragmentation of the industry perpetuates major hurdles to achieving this objective.

Whilst the site manager's role has evolved over the years through changes within the industry, their training at the industry level continue to be provided along the established mode offered by the Chartered Institute of Building's Certificate and Diploma Site Management training (CIOB C/DSM) and the National/Scottish Vocational Qualifications Site Supervision and Site Management (NVQ/SVQ SS/SM) training schemes. This have led critics to argue that the difficulties of meeting the industry's need for trained site managers are associated with inadequacies within the training provisions offered by these schemes.

This research was undertaken in recognition for the need for a critical appraisal of their training provisions with a view for improvements. It was developed on the concepts of training best practice which advocates improving the training provisions concurrent with change through the process of re-learning the whole training process.

The effectiveness of the training provisions offered by the training schemes and the impact of variables on the site managers' training needs were critically investigated. 'Gaps' within the training provisions were identified, approaches to bridge these 'gaps' were investigated and proposed for improvement.

The substantial contribution of the research is the expansion of the knowledge of the factors that impinge on the effective provisions for training site managers. The research findings propounds the conviction that the current training provisions needs to be expanded to be more effective and this can be achieved with the best practice framework for training site managers identified by the research.

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ABBREVIATIONS

BTEC	Business & Technology Education Council
CCC	CRISP Consultancy Commission
CCF	Construction Careers Forum
C/DSM	Certificate/Diploma in Site Management
CGLI	City and Guilds of London Institute
CIB	Construction Industry Board
CIC	Construction Industry Council
CIH	Construction Industry Handbook
CIOB	Chartered Institute of Building
CISC	Construction Industry Standing Council
CITB	Construction Industry Training Board
CITOC	Construction Industry training Officers Conference
CFR	Construction Forecasting and Research
CPD	Continuing Professional Development
CSCS	Construction Skills Certification Scheme
DEL	Department of Employment and Learning
DETR	Department of Environment, Transport and Regions
D*f*EE	Department for Education and Employment
DoE	Department of Education
DTI	Department of Trade and Industry
F/AMACOTT	Foundation/Advanced Modern Apprenticeships in Construction
FEFC	Further Education Funding Council
FIDIC	Fédération Internationale des Ingénieurs-Conseils
GDP	Gross Domestic Product
GNVQ	General National Vocational Qualifications

HNC	Higher National Certificate
HND	Higher National Diploma
ICE	Institution of Civil Engineers
ICT	Information and Communication Technology
IPD	Institute of Personnel and Development
IT	Information Technology
JCT	Joint Contracts Tribunal
KPI	Key Performance Indicator
LSC	Learning Skills Council
MCG	Major Contractors Group
MIM	Malaysian Institute of Management
NCVQ	National Council for Vocational Qualifications
NTO	National Training Organisation
N/SVQ	National/Scottish Vocational Qualifications
NQF	National Qualifications Framework
OSAT	On-Site Assessment and Training
SMETS	Site Management Education and Training Scheme
SS/SM	Site Supervision/Site Management
TNA	Training Needs Analysis
UCAS	University & Colleges Admissions Service
UK	United Kingdom

CHAPTER ONE
Project Introduction

1.1 AIMS OF THE CHAPTER

The chapter is presented to familiarise the reader with the subject and the purpose of the research. It provides the overview of the research topic and outlines the research structure. The research aims and objectives are presented. The scope of the research is discussed and the research significance is underlined. The chapter concludes with the chapter guides to the thesis.

1.2 STATEMENT OF THE PROBLEM

Training has long been recognised one of the important processes within the UK construction industry that can assist construction organisations meet the demand for highly able and skilled construction site managers. This belief stems from the conviction that success of construction projects are significantly contributed in-part by the competent and able site managers.

The industry is aware of the prevailing problems of shortage and the sharp increasing demand for site managers, and is conscious that it is facing a daunting challenge to endeavor to train more site managers needed by the industry. The response to the need for continuing qualification-based training and education in site management at the national level to support industry's needs was exemplified by the establishment of the well developed structured and integrated academic, vocational and professional frameworks within the industry. The major training schemes provided at the industry level led by the Construction Industry Training Board (CITB), Chartered Institute of Building (CIOB), National Vocational Qualifications (NVQs) and the many

construction companies through their in-house training programmes are well supported by the numerous training colleges, institutions of higher learning and vocational institutes that exist throughout the country. Provisions to facilitate the mutual recognition and accreditation of the various academic, vocational and professional qualifications within the construction sector have also been established. This has allowed easy access and progression for site management education and training within the industry. One has a choice of easy access and to progress through either the craft or academic route for a career in site management.

The construction industry has been facing the problem of poor levels of training. With over 200,000 construction companies within the industry and when construction site managers are regarded as the key personnel within these organisations, statistics reveals that the numbers that have been formally trained or involved in training has been and continue to be very small. The fragmented nature of the industry, the large proportion of micro-construction firms with little interest or support for training, widespread self-employment and sub-contracting practices that exist have been singled out as among the major factors that have inhibited training.

Notwithstanding the initiatives taken to promotion training and strengthen the academic, vocational and professional provisions, critics have continually argued that some of the provisions offered have been inadequate and unable to meet the training needs of construction site managers as a whole. Recurring problems of skill gaps, training standards that are lagging behind the advanced European countries, continuing reliance on traditional construction and training practices, and the reluctance to change have been associated to the consequence of inappropriate and inadequate training.

The role of construction site managers has evolved over the years and more so since the mid-1990's as a result of the reforms introduced to improve the performance of the industry. More managers in construction are now progressing through the academic and vocational route replacing the managers that have traditionally progressed through the craft route. The expanding use of new and modern construction system and materials requires the industry's site managers to continually expand their skills and knowledge to execute different tasks for different projects effectively. Adding on to the already varied role of site managers who have to comprehend with the numerous project situations within the industry, this has exacerbated to further complicate the problems of training the site managers.

Conversely, the response to change to suit the provisions for training the site managers concurrent with the changes taking place does not appear to have taken place. Despite the introduction of some additional modules to the some of the existing training schemes and initiatives to promote more training at the industry level, the approach to training has largely remained unchanged over the years. Traditional training approaches and mechanisms are still in use.

Within the current circumstance when the industry is trying to change, much more appears in need to be done to the current training provisions to overcome the persisting problems of poor training and deal with the increasing pressure for the industry to produce more knowledgeable, highly skilled and capable construction site managers. This research posits that this can only happen if the industry is willing to consider new paradigms to approach training by embracing improved design, delivery and the outcomes of site management education and training.

There has been little research done to investigate the current problems of training the industry's site managers. It is central that questions of: *"How should this problem be approached?"*; *What are the underpinning factors that have rendered the current provisions ineffective?"*; *"What are the factors that shape and influence the training needs of construction site managers within the industry?*; and *"What can be done to improve the existing training framework?"*, and *"How?"*; needs to be addressed if the industry is to be successful in meeting this need.

In contending with the phenomenon of changing role of construction site managers and practices within the construction industry, and after a thorough investigation, this research believes that essential element of confronting the problems of training site managers is for the industry to learn from other successful training initiatives, and this is through the adoption of best practice approach.

Much has been studied on the variables surrounding the site manager, the existing education, training and development framework, and principles/guidelines to training best practice. There appear to be a substantial gap between the variables and the actual provisions to effectively train the industry's site managers. At present there is no way of knowing the extent of influence that the variables have on the training needs of the site mangers, which is recognised as the fundamental determinant for any training scheme. This research project aims to investigate, uncover and understand how they impact on the training provisions, with a view of improving the current training provision through the development of an improved operational training framework based on best practice.

1.3 PURPOSE OF THE RESEARCH STUDY

This research is undertaken in recognition of the need for more research in this area of training the site managers. The purpose of this research is to provide valuable industry-based insights to the current problems of training and to expand current knowledge of those factors that influence the design, delivery and outcomes of site management training. The contribution and added-value of the research project is to offer better options and strategies to augment the existing provision within the construction industry with the potential for making the work and performance of site managers more effective.

Based upon the key influences, three major areas of enquiry proposed were proposed for the research:

a. What is the approach that can provide better understanding of the holistic training needs of site managers?

b. What are the variables and their impact on the training needs of site managers?

c. What are the provisions that need to be introduced to improve the existing training framework for training the industry's construction site managers?

1.4 AIMS AND OBJECTIVES

The research aims to make a substantial contribution to research relating to the training of construction site managers by offering an improved operational framework based on current and perceived future best practice for training of construction site managers. In

line with the overall aims of the research, the following objectives of the research were underlined:

- To precisely determine the variables and their impact on the training needs of site managers;
- To identify modifications and improvements to the existing training provisions; and
- Suggest a framework for future training practice.

1.5 SCOPE OF THE RESEARCH

The fragmented nature of training provided to construction site managers within the industry, which varies from the compulsory health and safety training to specialised training schemes designed for construction organisations, was identified as a key factor that has contributed to the problem. In contending with this phenomenon, this research is focused at the site management training provisions offered by CIOB Certificate and Diploma in Site Management (CIOB C/DSM), and National Vocational Qualifications Site Supervision and Site Management (NVQ SS/SM) training schemes. This was on the premise these are training which are recognised at the industry level and available to all site managers within the industry.

The research was developed on the concepts of training best practice which was developed through the process of re-learning and adopting best practices from successful examples. Augmented by the absence of other recognised approaches for dealing with training in-line with change and notwithstanding the peculiar nature of construction and the job of the site managers which make them unique, this strategy was deemed very appropriate on the justification that training concepts, approaches and

processes are all similar regardless of the type of training, organisation or industry. This was underlined in Chapter Three and Four of the research.

To derive at the research findings, this research was developed within the context of the conceptual framework outlined and data derived from the primary and secondary data drawn. Whilst the extent to which the research is applicable can be contingent upon these parameters, the significance of research of this nature lies in its provisions for offering indicators for subsequent research to generalise, identify key areas and pin-down the key elements of the phenomenon investigated. This would facilitate to further augment the effective training of site managers within the industry.

1.6 SIGNIFICANCE OF THE RESEARCH

It is anticipated that the research will be useful in assisting the UK construction industry to improve training the construction site managers by providing valuable in-sights and critique of the current practice, and by expanding the knowledge-base of the factors which influence the design and delivery of the training schemes. The study will offer options and strategies to improve existing provisions and contribute to the opportunity to improve the performance of construction site managers.

The fragmented nature of the construction industry is a common phenomenon in many countries, especially those which have modeled their training approach on UK practice. There could be much that can be learned from current and future practices in the UK that are applicable to approaches used elsewhere internationally.

1.7 GUIDES TO THE THESIS

Chapters Two presents a synthesis of the literature review. The nature of the UK construction industry is presented and this is followed by the discussions on issues relating to the industry's workforce to set the context of the research. The unique nature of construction projects are outlined to provide the understanding of the setting within which site managers operate. Site management, the significant role and contribution of site managers to construction projects are discussed, and the definition of site managers for the research is presented.

Chapter Three presents the discussions on training and training best practice. Literature and theories related to human and organisational development to underpin the framework for understanding training is firstly discussed. The definitions of education, training, development and learning are underlined. This is followed by the discussions on training, best practice and training best practice. The fundamentals from which current concepts on training were developed are discussed critically together with the factors that have contributed to the growing importance of application of training best practice. The findings are summarised to establish the conceptual training best practice framework for this research.

Chapter Four presents the background and the critical analysis of the current provisions offered for site management training within the construction industry which relates to the training of site managers. Key in-sights to the current training provisions, which influence the design, delivery and outcomes of site management training are underlined. The existing frameworks for the education and training of site managers offered by the academic, vocational and professional structures are examined. The findings are used to

determine the validity and opportunities of the current provisions in meeting the training needs of site managers. The chapter concludes by presenting the merits of the current training provisions in meeting the training needs of site managers and the justification why more research is needed to investigate and improve the current training of site managers.

Chapter 5 presents the research design and methodology. It provides the critical discussions on the approach selected to develop the research activities and the protocol observed to maintain the research validity and reliability. The approach adopted to conceptualise the research theoretical framework; the definitions, concepts and themes drawn from the literature review; and the approach to operationalise the research is critically discussed. The research problem, research questions and the research variables are underlined. The research hypotheses, sub-hypotheses and research model are presented. The pilot research study is also discussed together with justification on the approach and the research instrument selected for the data collection.

Chapter Six presents the quantitative data analysis and findings for the site management training provisions offered by the Chartered Institute of Building Certificate/Diploma in site Management (CIOB C/DSM) and National/Scottish Vocational Qualifications Site Supervision and Site Management (NVQ/SVQ SS/SM) training schemes. The validity of the research Hypothesis 1 and 2 is tested together with the test on the significance of adopting the propositions within the sub-hypotheses for improving the training provisions. The procedure for the hypothesis testing, process of extrapolating data from the survey questionnaires, the IT software used and the processes carried out to enable the analysis are critically discussed. The rationale for the adoption of the methods selected is critically discussed together with the statistical tests administered to establish

and validate the results. The chapter concludes by confirming the validity of Hypothesis 1 and 2, and underlining the propositions carried forward for the investigations in Hypothesis 3.

Chapter Seven presents the qualitative analysis of data and findings, and the identification the best practice framework for training site managers. The validity of Hypothesis 3 is tested. The approach on how the data drawn from the findings of the quantitative research findings was developed for Hypothesis 3 is critically discussed. The approaches drawn for collecting and analysing data, the techniques adopted to integrate the quantitative data into the analysis and the concepts underpinning the research process is discussed. The justification for adopting certain selected procedures within the processes observed to maintain the research validity and reliability is also presented. The findings emergent from the analysis are further verified by incorporating feedback from key parties related to the training at the industry level. The chapter concludes by confirming the validity of the best practice framework identified by the research.

Chapter Eight is the final chapter of the thesis and it presents the summary of the research work, covering all the phases of the research process. The key research findings are presented and discussed, and areas for further research are proposed. The research viewpoint on the subject researched was reaffirmed at the conclusion of the chapter.

CHAPTER TWO
The UK Construction Industry, Site Management and Construction Site Managers

2.1 INTRODUCTION

This chapter is the beginning of the literature review of the research. It presents the review of literature on the nature of the UK construction industry, site management and construction site managers. The purpose of this review was to examine pertinent reports and literatures to set the context of this research for the reader. Although much of the background covered is already well known and available in literature, the purpose of the inclusion of some brief extracts in this literature is to emphasise their significance in this research.

It begins by presenting the literature discussing the nature of the industry and its significance to the UK economy. The problems of the industry's under-achievements together with the difficulties of getting the industry to improve with changes that have taken place were underlined. The nature, supply and the problems related to the industry's workforce and the subsequent measures taken to address this problem are specially highlighted.

To establish the scope of site management and to outline the management function of construction site managers, the nature of construction projects and the historical development of site managers were firstly reviewed to provide the understanding of the setting within which site managers perform. Views from selected literature and research related to construction management and site management were then critically discussed to precisely determine who the site managers are, the scope of their job, the responsibilities they assume and the variables, which influence their job. The

importance of site managers in the running of construction projects was also underlined. The chapter concludes by ascertaining the role and tasks of site managers in construction projects and establishing the definition of site managers for this research.

2.2 THE UK CONSTRUCTION INDUSTRY

The construction industry has always been of enormous economic and social significance to the UK economy and its people. Not only has it been responsible to provide and maintain the nation's needed infrastructure facilities, it employs about 1.6 million people, which is approximately 6.5% of the UK workforce and creates an average of about 8 - 9% of Gross Domestic Product (GDP) (Const. Statistics, 2004; DTI, 2002a; DTI, 2003a). The industry is currently experiencing a period of sustained economic growth since the late 1980s, with most figures showing that construction industry output has increased some 8% (CFR, 2002).

During the last two decades the industry has experienced cyclical fluctuations in output and employment, being highly sensitive to the general economic climate. It was in recession in the early 1990's followed with recovery around 1994 - 95. However, since then a more stable growth rate of 2.5 – 4% has tended to prevail.

The main area of construction activity within the industry is building and civil engineering and this includes everything from domestic repair to large and sophisticated civil engineering projects such as the Channel Tunnel and the Millennium Dome project. Nearly one half of all the construction work is comprised of repair, maintenance and improvement works. The balance is new works which consists of public and private housing, infrastructure, other public non-housing and private

industrial sub-sectors. Private commercial projects form the largest sector of the industry while public sector projects have gradually reduced since the early 1980's.

The UK is regarded as one of the five leading countries involved in international contracting in Europe and has undertaken an average of about £3.5 – 4 billion worth of international construction contracts annually since the early 1990's (DTI, 1999). However, the largest UK firm is relatively small in world terms with the highest placed UK firm is eleventh in the league of European contractors based on their annual turnover in 2000 (Building Contracting, 2001). Within the global context, leading international companies such as Japan's Taisei, Shimizu and Kajima Corporations, France's Bouygues, and Bechtel of the US dwarfs these companies.

There are approximately 200,000 construction firms within the industry. 96% of construction-related firms employ fewer than 10 people and craft workers can account for as much as 60% of the workforce (CIB, 2001). At its peak in 1996, about 47% of people working in the industry as a whole estimated are self-employed. With the introduction of sticker controls over self-employment, the share of the self-employed in the industry has gradually declined (FEFC, 1999).

Construction is in a period of change with the introduction of new technologies and new construction processes driven by the reforms introduced to the industry in the mid 1990's (DETR, 2000). Clients are more sophisticated, demanding and emphasising even higher quality standards, construction within budget and tighter completion dates. There is a growing trend among larger companies in the industry to increase the value of their business within the service sector through investments in property, private finance initiatives and facilities management. Construction clients continue to influence

the choice of technologies through their demand for faster construction time, better quality, cost and value for their buildings with reducing running costs. There is also a shifting trend to partnering from more adversarial and competitive methods of project procurement.

2.2.1 Reforming the industry

At its best, the construction industry it is capable of delivering the most difficult and innovative projects with outstanding quality, implemented with world-class performance standards that can match any other construction industry in the world. However, as a whole, it was found to be under-achieving and performance in some areas of the industry had not been effective.

Concerns for the weaknesses of the industry led to the setting up of an enquiry led by Sir Michael Latham, which culminated in the Latham Report entitled 'Constructing the Team Report' in 1994 (Latham, 1994). It pointed out issues and key weakness of the industry that was the cause of dissatisfaction, and challenged the industry to reconsider its existing practices and processes to improve performance. This led to the establishment of the Construction Industry Board (CIB) in 1995 as an initial initiative to co-ordinate the industry's activities and act as a forum for liaison for the representative bodies of the industry (CIB, 1999).

This was followed by the 'Rethinking Construction Report' or better known as the Egan Report in 1998 (Egan, 1998) following two studies undertaken by the British Property Federation and the Design Build Foundation (DTI, 2001c). Key failings of the industry were further revealed. Amongst others, it was reported that more that a third of major clients are dissatisfied with contractor's performance to the quoted price and time,

resolving defects, and in the delivery of the final product of the required value. Correspondingly, more than a third of clients are dissatisfied with consultant's performance in co-coordinating teams, innovation, providing a speedy reliable service and value for money.

With the reforms, construction was expected to undergo significant changes in its process and technology within the next five to ten years (CITB, 2003). Various initiatives such as "Rethinking Construction", "Demonstration Project", "Lean Construction", "Construction Best Practice" (DTI, 2002b) and Key Performance Indicators (KPI) (CIB, 1996) were introduced to encourage the industry to change. These changes were expected to result in very significant consequences to the workforce especially in terms of different skill requirements as the industry attempt to shift away from the reliance on traditional construction approaches. Construction business management is expected to become more critical, in particular, through the adoption of new Information and Communication Technology (ICT) systems, and with the push towards a more qualified workforce to ensure better quality assurances.

However, to date performance improvements brought by the reforms has been slow and mixed. Construction News (2004a) reminded the industry the need to warm to the global challenges whilst reports from CIB (2000) reveal that performance improvements following the reforms have not been up to mark. For example, by 2000 the percentage of construction project overruns have been reduced to only 9% on time, 70% of projects were delivered within 5% of the tender cost and 38% delivered within the 5% of the tender programme. Real construction cost has fallen by only 1% in year-on-year comparison between 1997, 1998 and 1999, a far cry from the 30% initial target set. Construction News (2004b) reports of the missed CSCS and KPI deadlines, and in

July, 2004 (Construction News, 2004c) they report that construction was well short of reaching safety targets with the low reduction in the number of fatalities and injuries.

2.2.2 The industry's workforce

Notwithstanding the great emphasis on the improvement and development of the industry's workforce within the reform programmes, reports (DTI, 1999; DTI, 2002; DTI, 2003) have been consistent in reporting the construction in the UK has remained fairly labour intensive and heavily craft based.

Problems of skill gaps are persisting and spans across the different professions of the workforce. CITB (2000a) reports that most craft workers are likely to lack technical and practical skills, while managers, site managers, administrators and professionals mostly lack management and team working skills. Agapiou *et al* (1995) and Mackenzie *et al* (2000) observe that the traditional responses to shortage of any type of skilled labour by employers have been to increase remuneration and/or poaching of workers from others. This has invariably contributed to the rise in cost of construction. In many instances, in the face of inadequate supply of skill labour projects have had to make do with inferior labour.

Mackenzie *at al* (2000) attributes the causes of labour and skill shortages in the UK construction industry to a number of inter-related factors. They are:

(i) the demographic decline in the number of young people available to enter the labour market;

(ii) the changing nature of construction markets and the demand for new skills;

(iii) the introduction of new technology requiring new skills;

(iv) the cyclical nature of the construction markets;

(v) the fragmentation of the industry;

(vi) the use of specialist/labour-only sub-contractors; and

(vii) the decline in construction training and training resources.

Construction News (2004d) reports that managers in construction are overworked. The DTI (2000) reports that people working in the construction industry are getting older and tended to be white males. They are more likely to work in small firms or quite likely to be self-employed. They work longer hours but are paid around the average salary of other industries. The probability of them getting injured or killed at work is higher due to poor consideration for health and safety at the workplace.

In contrast to the other European countries, there were signs of an alarming gap between skills of the work force in the UK and those abroad (Building, 2001). Clarke and Wall (1998) found that 70% to 80% of the UK construction's workforce was estimated to have no formal qualifications. At least 35% or workers are classified as labourers as compared to 5% in Denmark, 7% in the Netherlands and 17.5% in Germany. They report that on the Continent, unskilled workers are becoming more marginal as employers increasingly employ skilled labourers who are encouraged to plan and control their own workload without supervision. On the contrary, in the UK, the industry consists of many small firms who are unable or unwilling to invest in developing their workers. Similarly, larger firms increasingly subcontract much of their jobs and this has led to neglect to the much needed development and training of the work force within the industry. Their follow up report (Clarke and Well, 2000) add that the craft-based approach to construction with low levels of mechanisation and pre-fabrication have resulted in lower productivity and slower construction process but requiring higher levels of supervision.

CITB (2003) forecast that over the next five years, the industry need to recruit and train some 380,000 new people between 2002 and 2005. This means 76,000 new recruits will be required each year and 65,000 thousand will be needed to replace those retiring from the industry and the balance for the increase in construction employment. Site managers, together with other professional workers and managers are among the occupations that were forecasted to be in high demand for the future.

2.2.3 Training the workforce

A number of researchers and parties alike have voiced the importance of training the industry's workforce. The DoE (1977) recognises training as the process that can systematically develop attitude, knowledge and skill required by an individual in order adequately to perform a given task or a job. Hequet (1993) adds that proper training can lead to more satisfied employees and under certain circumstances can reduce turnover; training drives up skills and this in turn drives up performance of companies. Langford *et al* (1995) and Fryer and Fryer (1997) emphasise that training is imperative to the construction industry.

Built on this conviction, various initiatives have been introduced to promote training but critics have been frequent in pointing out the failings.

Agapiou (1998) and Building (2001) found training on-offer within the industry still very inadequate and resources allocated to training within the industry continue to be very low. Arshad (1997) in his research recalls the study that a world-class organisation allocates an average of 15 days of training a year per man but UK construction companies has an appalling annual average statistic of one day training per man.

Contract Journal (2004) warns that the industry cannot sustain its current level of growth without leading deeper into skills crisis. The BEIC (2000) found that the net cost of training crafts people in the construction industry is relatively high compared to other sectors. These reports have also been common in reporting that on-the-job training is popular and is considered important by employers. Whilst they demand site-proven skills, many are reluctant to provide the required work experience for trainees.

Gann and Senker (1998) observe that construction trainees enrolling into the training programmes have dropped steadily during the 1990's and only saw a rise in the late 1990s and early 2000s. Despite this rise, DTI (2002a) and the CITB (2003) confirm that that the industry is still far short of trained workforce. To exacerbate this problem, CIOB (2003) reports that entrants to construction related professional courses have continued to fall and have resulted in the closure of a number of departments in universities offering construction related programmes.

Responding to these problems, CITB as the National Training Organisation (NTO) responsible for training within the industry through their CITB Construction Skills initiative has implemented strategies to address this problem (CITB, 2000b). This was through; (i) encouraging partnership with the industry and training organisations to promote career and training in the construction industry; (ii) facilitating and promoting ownership of on-site and off-the site training and assessment by employers, (iii) encouraging lifelong learning activities, (iv) creating a grant scheme which rewards achievements and competency through training, and; (v) encouraging non-traditional new entrants to the industry.

There has been is little evidence to suggest that the initiatives taken to improve training have brought significant success. Evidence of inadequate training and the continuing shortage of trained manpower continue to be reported to suggest that much more needs to be done to improve the situation.

2.3 CONSTRUCTION PROJECTS AND THE HISTORICAL DEVELOPMENT OF CONSTRUCTION SITE MANAGERS

2.3.1 Nature of construction projects

Literatures by scholars on construction such as Fryer and Fryer (1997), Frein (1980), Hillebrandt and Cannon (1989), Newcombe *et al* (1993) and Calvert *et al* (1995) conceive that each construction project is unique irrespective of its nature, size and volume. This is particularly in respect of different combinations of construction techniques, the knowledge and skills required to construct and the varying patterns of relationships between organisations engaged to implement the project. The relatively more continuous, stable and enduring relationships within the various parties in other manufacturing settings contrast greatly from construction projects. Common in their literature were the conception that construction projects are characterised by their temporary nature and the geographical dispersion of sites of production. Each project is defined by the physical boundary within which a construction project takes place and where the construction activities evolve. The large number of separate but inter-dependent nature of tasks within construction projects operates on a demanding time scale and demands effective utilisation of resources. As the project gains momentum, money is spent at a very fast rate. This is exacerbated further by the harsh construction-working environment and the numerous but short term collaborating parties within each project. Compounded by these variables, construction projects are also subjected to the pressures of its 'external environment'. Newcombe *et al* (1993), Bennett (1997) and

Walker (2002) stress that it is crucial to perceive construction projects and organisations as 'open systems' which do not stand alone in isolation. This was illustrated by Newcombe *et al* (1993) as shown in Fig. 2.3.1.

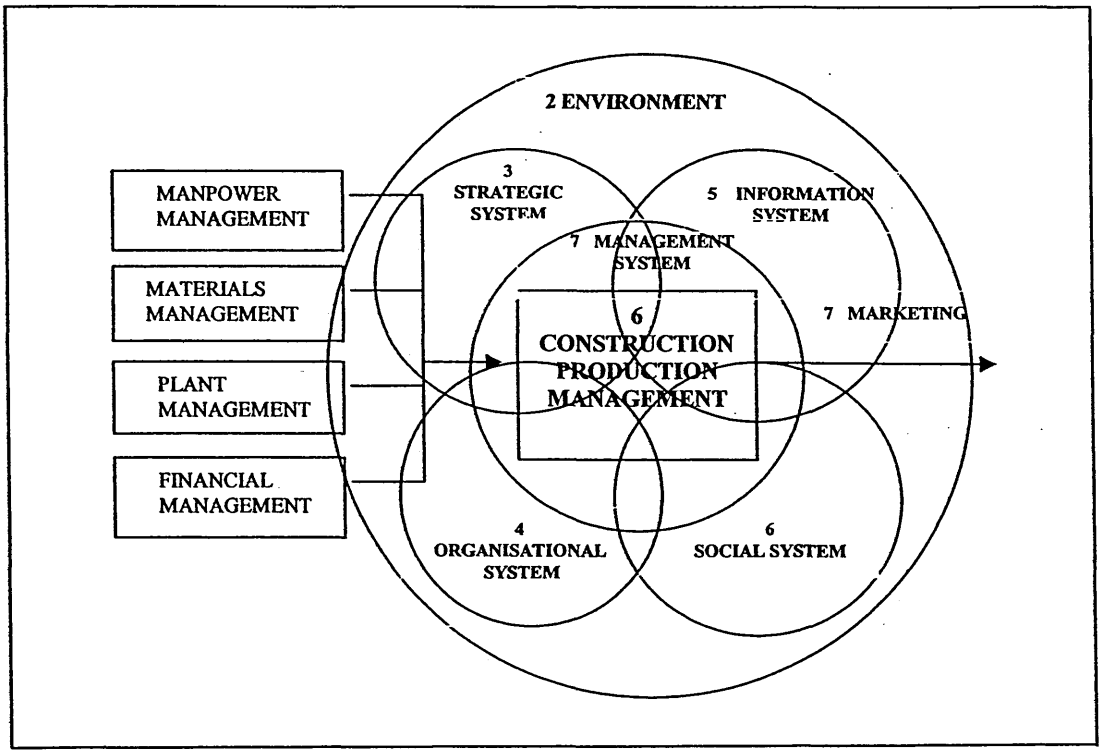

Figure 2.3.1: The inter-phasing systems within construction production management (Newcombe *et al* (1993)

As dynamic 'open systems', they are continually influenced by their internal sub-systems and interacting with the external environment of which they are part. Therefore, they need to be able to adjust by shaping and reshaping to adjust to the changing environment in-order to sustain. It is within these influences that site managers operate. They need to be continually sensitive and able to respond to the array of activities taking place within and surrounding the construction project. They perform in an atmosphere of uncertainty, take responsibility with a considerable amount of risk and live up to the pressures to keep abreast with changing demands and expectations of the industry.

2.3.2 Historical development of site managers

In the medieval times, construction projects were relatively simple and tradesmen were employed directly by employers to complete the job. As building works became more complex towards the end of the 18th century, the general supervision of the various trades and their organisation in construction projects began to be placed in the hands of master craftsmen, who, for their responsibility charged a fee, or took a profit on the total value of the work (Boyer, 1993).

This practice became popular with the increase in public sector activities at that time and following the Industrial Revolution but diminished towards the late eighteenth and early nineteenth century (Dolan, 1979). The growing national economy from the wealth generated from the Industrial Revolution and rapid industrialisation that took place generated huge demand for new buildings and built infrastructure. It was during this period that the founding and the development of general builders, specialist firms and specialist professions in the construction industry began (Bowley, 1966).

The First World War, and the resulting activities that followed, contributed to further accelerate demand for built infrastructure and alter the shape of the construction industry. More was demanded from builders, as projects grew even more complex. There was already evidence that builders had practiced 'contracting' prior to this but the demand for such services became popular and necessary during this period. Boyer (1993) refers to this period as the emergence of the general building contractor who carries out the whole work involved in the contract and employs men of every trade required in the contract.

The development of new materials, technology, increasing use of specialists and sub-contracting practices demanded that builders be more methodical in managing the construction project. It was during this period that the practice of site management and the 'modern construction firm' was pioneered (Powell, 1980). The supervision and co-ordination of the work of each trade by the master craftsmen was taken over by the person often referred to as the 'general foreman'. The general foreman was the main contractor's key first line supervisor on site and at the time had total control over most of the construction resources on site. The general foreman had complete authority to even dismiss any man or employ another without having to contend with contractual or union issues.

This role started to change following the Second World War. Increased demand for commercial and industrial infrastructure resulted in larger and far more complex projects to match the advanced technological systems employed in buildings. Rationalisation and high competition in the industry resulted in sharp undercutting of profits among builders, which meant that contractors have to adhere rigidly to the terms and procedures of the contract and control closely the production process to be profitable.

The growth of trade unionism and the establishment of the 'Employment Protection Act' contributed to alter further the structure of employment and management of construction project. The complex nature of each system contributing to the built form has resulted in the need for specialists in both design and construction. Contractual arrangements of projects in the construction industry have shifted away from the traditional form to a more integrated design and production system, which require close collaboration among members of the building team.

With further changes brought about by the reforms introduced within the construction industry, more knowledge and skills are demanded from the personnel managing the construction production process. The general foreman's job specification has since changed, and more is demanded from them at the workplace today to deal with such complexities. The most evident change is the general foreman's duties from supervising and controlling the works of tradesmen to managing the construction production operations. Consequently, this led to the change in the term used to refer to the personnel performing this function from general foreman to site manager (Mustapha, 1990).

2.4 SITE MANAGEMENT AND ROLE OF MANAGERS IN CONSTRUCTION

The proceeding literature was devoted to critically review management, and the role and tasks of managers before progressing to discuss site management and site managers.

2.4.1 Management

Management was derived from the word manage which means to handle/control or to husband (as in a farm) and the evolution of management theories commonly referred in the study of management today was said to have started following the Industrial Revolution around 1850 (George, 1972, Stoner and Freeman, 1992). Increased business competition and rewards for innovation brought about by the industrialisation process were believed to have encouraged people to think of ways to improve efficiency.

Management drawn for the research was conceived from the culminating views of Handy (1999), Mullins (2002), Torrington *et al* (2002), Cummings and Worley (2001), Drummond (2000) and Morgan (1997) as follows:

Management is a generic term. It has been subject to many interpretations and there has been little common agreement on the definition of management because most definitions are either too vague or limited to define management as a whole. Management must be viewed and applied within an integrated, interdisciplinary complex perspective as it spans across a wide area of study including psychology, sociology and anthropology.

The common approach adopted by the most of the literature as the starting point to discuss management relates to organisational behaviour, and the evolution of management thinking over time. Whilst many other approaches of conceiving management have since spawn, the approaches propounded by scientific management, bureaucracy, human relations, system and the contingency approaches for understanding management continue to be cited as a basis for conceiving management. Scientific management approach promotes the notion that effective management as finding out the most efficient methods for co-ordinating and controlling work. Bureaucracy approach suggests the significance of management through administration based on expertise, disciplines and system of rules. Human relations approach supports the importance of human psychological and social elements as the fundamental considerations in management. The systems approach promotes managing organisations as comprising of a number of interrelated sub-systems. The contingency approach suggests that the most appropriate structure and system of management is dependent upon the contingencies of situations for each particular organisation.

Whilst there have been critics that argue the adequacy or appropriateness of the application of these concepts within actual management practices, management scholars share a common view that they offer a number of positive advantages in learning

management. Amongst others, it offers a holistic conception of the complexities of management; they provides a tangible framework in which the management principles enunciated can be set; and against which comparisons with management practices can be made.

Within the organisational context, the research notes that the significance of understanding that management relates to organisations and that organisation exists to achieve results. It is concerned with the arrangements for carrying out of the processes to execute work for the organisation to achieve the desired results. This centres principally at the exercise of formal authority of the manager leading the work of other people within the organisation. The organisation, process and resources are the key elements of management. Organisation relates to the structure, set-up of the 'management' system, while man, machine, material, money and methods are key resources required in management that are utilised in the process of managing.

Management is non-homogeneous. It relates to all the activities of the organisation, and it takes place in different ways and at different levels within the organisation. This has consequently led to the variable perceptions on the nature of the manager's job.

2.4.2 Roles and tasks of managers

It was not easy to define management and a number of different ideas attributing to the understanding of the job of managers were found in MIM (2001), Mullis (2002), Handy (1999), Torrington *et al* (2002), Martin (1997) and Bennett (1997). One approach identified was conceiving the managers' job was through their attributes and qualities. It suggest that in-order to carry out the process of management, managers are required to possess a range of technical competence, social and human skills, and conceptual

ability. As managers advance up the organisational hierarchy, greater emphasis will likely to be placed on their conceptual ability whilst proportionately less will be required from their technical competence, with the requirements for social and human skills remaining generally constant. Another approach suggests that management is getting work done through the efforts of other people. This entails the process of delegation through entrusting authority and responsibilities to others. As such, the nature of delegation is an essential element of management and skill required of managers.

The approach most favoured approach in literatures suggests conceiving the job of managers from the perspective of the management work processes and activities. Drawing from the works of Fayol (1949), it suggest that management can be divided into the five major components of planning, organising, commanding, co-ordinating and controlling to reflect the work and tasks of managers. However, the emphasis given to the different tasks/activities may vary widely between different managers within and between organisations.

Another significant approach to conceptualise the role of managers identified was from the works of Mintzberg's (1973) 'work activity approach', which suggest that the essential functions of the managers' job are common. This is despite the variables of the organisations and its structure, the level of management and the type of management activity carried out by the organisation. It suggests that what managers do, can be more meaningfully described in terms of their roles that can be classified into the three groups of: (i) interpersonal roles; (ii) informal roles; and (iii) decisional roles but the degree on the emphasis of each of the roles may vary. Some are likely to spend more time on certain roles than other managers are.

Conceiving the above views, it was drawn that are many attempts to understand the nature of the managers' job by reducing the complexities of understanding into a series of prescriptions about what managers ought to do. Each has their own merits and demerits. There was no intention to extend this discussion in this chapter but detailed discussion on this can be found in the work referenced. Despite the similarities in the general activities of management, the job of managers differs widely. The factors that influence the nature of the manager's job are varied and the impinging factors include; the nature of organisations, its philosophy, objectives and size; type of organisation structure; the activities and tasks involved; the technology and methods of performing work; the nature of people involved; and the level in the organisation at which the manager is working.

Although at first glance the different approaches discussed appear different in certain aspects, the critical examination of the literatures conceives that they are not significantly contrary. The debate on the adoption of a particular approach in conceiving the role/tasks of managers tends to revolve around the use and interpretation of the different concepts and emphasis placed upon them in application. It is apparent that there is no general agreement to what managers do, or what they should do. However, the frameworks from which the understanding of the managers' roles/tasks can be drawn are in place, depending upon the context from which they are perceived.

2.4.3 Site management

The application of the management concepts discussed was evident in literatures by authors in construction (Walker, 2002; Harris and McCaffer, 2001; Pilcher, 1992; Calvert *et al,* 1995; Fryer and Fryer, 1997; Hatchett, 1985; Royer, 1981; Frein, 1980).

commonly associate the existence of project organisations as to achieve objectives set out by the clients, which are usually the combination of cost, time, function, quality and/or utility objectives. Their views are consistent in maintaining that the management of construction project take place at various levels and segments within the project organisation.

CIH (1998) describes site management as a very broad area, albeit with more bias towards the 'process' approach to management when it suggests that the main activity of site management is planning, running, overseeing and generally organising construction projects. It identifies the broad spread of work in site management as carried out by several types of people and construction managers have the overall responsibility of running a site. It underlines that whether the personnel are described as site manager, site agent, project manager, contracts manager, building manager or simply construction manager, they are all responsible for managing a construction site.

Arshad (1997) studied the CIOB (1965) frameworks, which underline the general pattern of construction management structure and the possible relationships within site management, which he summarised as shown in Figures 2.4.3.1. His summary of the possible line relationships in site management is as shown in Figure 2.4.3.2 (classified as C1, C2 and C3). He maintains that within each element of these frameworks, various sub-areas of management including corporate, financial, design, site, production, resources, maintenance and personnel takes place. He adds that there may be subordinate line management personnel responsible for site management and their title may be qualified by an appropriate word, e.g. 'section'.

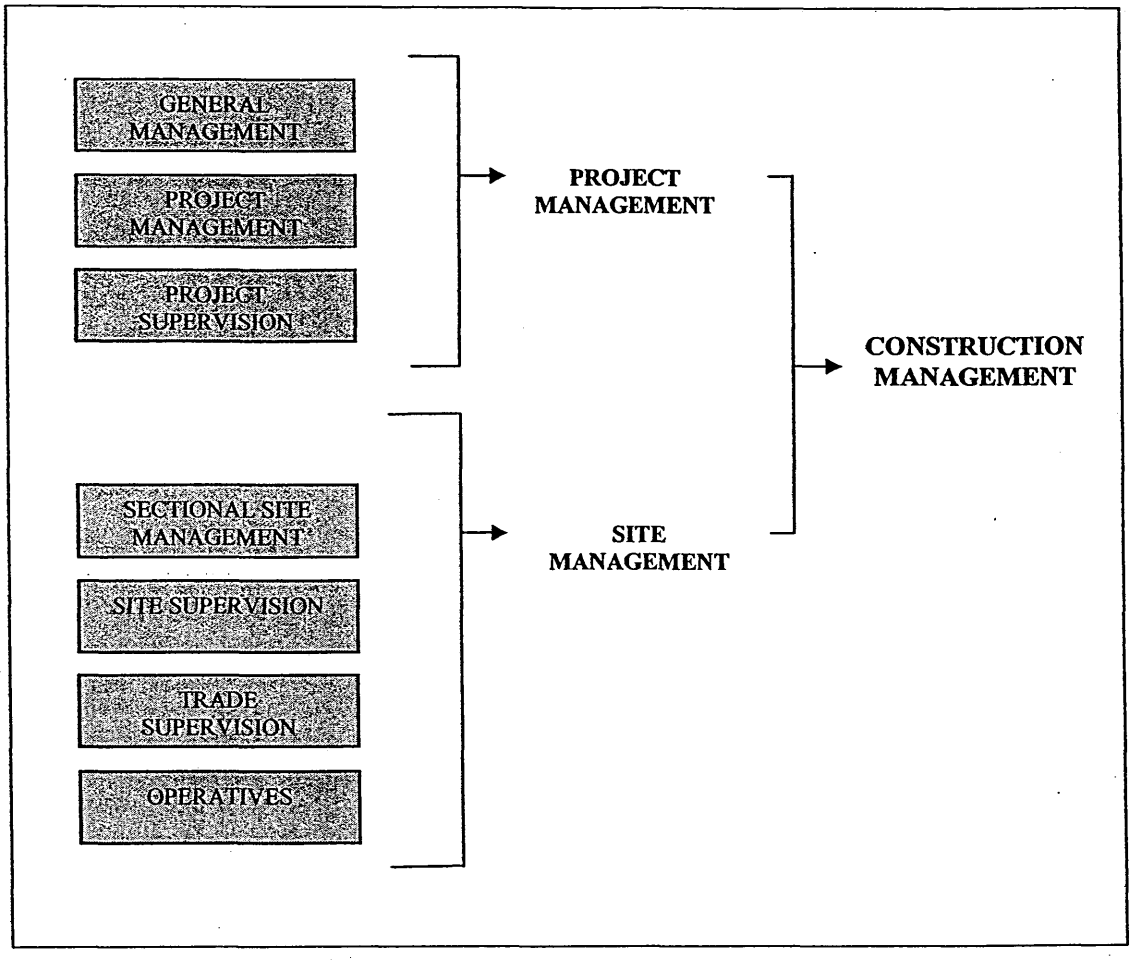

Figure 2.4.3.1: General pattern of construction management structures (Arshad, 1997)

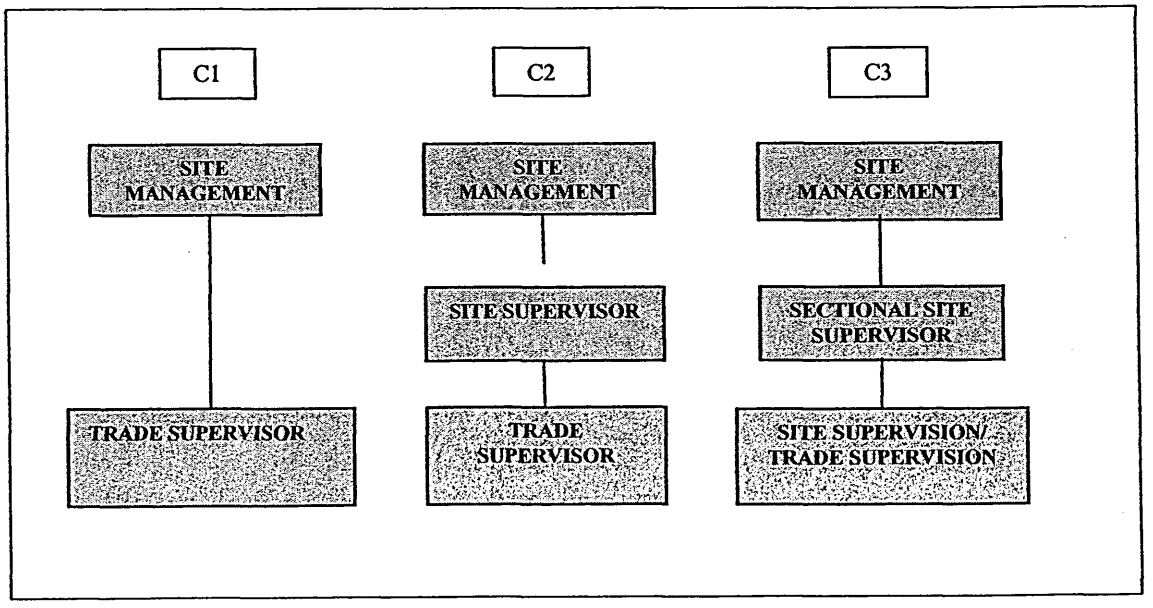

Figure 2.4.3.2: Possible relationships in site management (Arshad, 1997)

Further examination on studies to identify site management by Farrell (1999), Gunning (1983), Mustapha (1990) and Burgess (1999) identify their common agreement of site management. This encompasses; (i) the responsibility for all production management of the work undertaken, (ii) the execution of the job at the construction site; (iii) the management of sub-contractors, specialist and construction resources on site; (iv) the management of all related activities on site, (v) it takes team effort to execute the job; (vi) the composition of the teams is usually relative to the nature and size of the project; and (vii) site managers are important in all the circumstances.

Drawing from the above, it was evident that there has been an all round agreement on the view of site management. As a key component of construction management, site management exists to assist the project organisation achieve the project goals as set out by the construction contract. From the 'humanistic' management perspective, the human element of site management can be considered as among the most important element of the whole site management system. Functioning as teams, they activate and utilise all other resources to the construction project. Views that associate site management to the production and the execution of the construction work at the project site; comprising of teams of people; sub-contractors, specialists and construction resources; planning, organising, co-ordinating, controlling, leading, communicating and motivating as the common tasks of site management; and the importance of site managers, was found to be the most recurring theme. Therefore, all these views were adopted to relate to site management for this research.

2.4.4 Roles and tasks of mangers in construction

There were diversities when the management concepts discussed were applied to construction projects, as there are differences in the managerial activity according to the

type, nature of the project and the context of the organisation or project team. Given this diversity and the varied application of the term site manager, a wide range of approaches have been adopted to identify the role of the site manger.

For example, Hillebrandt and Cannon (1989) in viewing the role of managers in construction adopted Mintzberg's 'work activity theory' approach. They describe the role of the manager as can be divided into three groups: interpersonal, informational and decisional. Interpersonal role encompasses the role of figurehead, leader and liaison role; informational role involves monitoring, disseminating, and spokesman role; and decisional role will include entrepreneurial, disturbance or crisis handler, resource allocator, negotiator and leadership role.

On the other hand, Calvert *et al* (1995) divided the field of management into general and specific branches, each of which particular techniques or 'tools' have been developed. They identify those branches from the perspective of management elements introduced by Fayol and others in the construction industry as:

> "... *corporate management, financial management, design management, maintenance, personal, administration and purchasing*"

They suggest that the branch of management within which the site manager is mainly involved is production management which according to them:

> "*.... covers the complete process of planning co-ordinating the work of the construction; planning, programming, progressing, materials control, work study, quality control, safe working practices, subcontract management, communication and plant management*"

They conclude that the key processes that relate to the role of the site manager are; forecasting or predicting, planning, organising or preparing, motivating or commanding, controlling.

Fryer and Fryer (1997) recall that when asked what they do, most managers answer with terms such as planning, organising, directing and controlling. On the skills required by the site manager, they classify the skills as human, technical and conceptual skills. They assert that it is important for managers to have good human skills because a large percentage of the managers' task is primarily managing people. This is needed in all the processes of leading, motivating and communicating in-order to establish good relationships with colleagues, subordinates and subcontracting personnel to get the job done. They add that although technical and conceptual skills are important, the manager's potential cannot be realised if the manager fails to bring together a cohesive team. Langford *et al* (1995) suggest that communication is one of their more important functions as they operate in the hub of the construction communication network. They add that effective communication and high levels of informality between the participants in the construction process are very important but managers often underestimate the strength of such personal contact, particularly in terms of their authority to resolve matters beyond his/her remit.

Recalling the works of Wolfgang Kaltz (1971), a scholar on management systems, Lavender (1996) concludes conceptual, human relations, administrative and technical skills as the skills required of managers in construction. He states that conceptual skills relate to intellectual skills; human skills are concerned with how the manager interacts with others; administrative skills are activities that are in support of the main purpose of the management; and technical skills relate more to the production process. He adds

that while is not easy to generalise the four set of skills described, managers will require some measure of each of the skills and supervisory managers are likely to benefit more from technical and human relation skills.

2.5 CONSTRUCTION SITE MANAGERS

2.5.1 Importance of site managers in construction projects

Whilst more current literatures such as those by Griffith and Watson (2004), Walker (2002), Baxendale (1998) and Harris and McCaffer (2001) impresses that the success of any construction project is contingent on the effectiveness of the project management team of which site managers is part, earlier literatures were found more explicit in emphasising the significance of site managers in construction projects.

Amongst them, Totter (1982) views site managers as indispensable in construction projects and he believes that without them, the whole industry would collapse. Wakefield (1985) sees the site manager as the key man in construction and describes the site manager's job as the most arduous, demanding, responsible single function in the building process.

Lemarie (1982) argues that the most important staff role in contractors' organisations is that of site managers. Sharp (1982) see site managers as the pivot around which everything else in construction projects revolve. Walkerdie (1982) stresses that although the responsibility and authority in a project go hand-in-hand; the person who normally takes the blame against a contract is the site manager. Chevin (1993) suggest that site managers have the toughest job in the business and that the site managers' role is the most important in the construction industry.

The importance of site managers to construction projects is also reflected in the various contracts forms used in the construction industry. This includes the followings:

The JCT Standard Form of Management Contract 1987 states:

> *"The Main Contractor shall constantly keep upon the site a competent manager"*
>
> Claus 3.13
>
> *"The contractor shall keep a competent person-in charge on the site"*
>
> Claus 10

The ICE Form of states:

> *"The Contractor shall give or provide all necessary superintendence during construction of the Works"*
>
> Contract Claus 15
>
> *"The Contractor or a competent and authorised agent is to be constantly on the Works"*
>
> Claus 15 (2)

The FIDIC Conditions of Contract on Contractor's Superintendence asserts:

> *"... To provide a competent and authorised representative..."*
>
> Clause 15.1
>
> *"... to provide competent supervisors, technical assistants, foreman for the fulfilment of his obligations under the Contract"*
>
> Claus 16.1

The New Engineering Construction Contract requires potential contractors to supply as part of their tender offer, a list of 'key people' that include the director/senior manager, the contract manager and the site manger. It states:

"... the Contractor either employs each key person named to do the job for him stated in the Contract Data or employs a replacement person who has been accepted by the Project Manager'.

Clause 24.1

There was no evidence or comments in literature to suggest that site managers are not key personnel or his contribution is not significant in construction projects. Most criticisms identified from the literature researched revolve around their role, education and training, and this is discussed in the following chapters.

2.5.2 Studies on roles and tasks performed by site managers

Given the range of possible approaches available, researches undertaken to investigate the role of site mangers within the construction industry were also varied.

The Department of Employment and Learning (DEL, 2004) outlines the role of the site managers into classification of duties which encompass: co-ordinating work to ensure that it done on time, the right standard and agreed cost; liaison with other construction professionals; direct supervision of labour on small sites and co-ordinate their work through others for larger sites; safeguarding the standard of materials used and the quality of work on site; and, administrative work which includes paperwork, budget management and record keeping.

Brown (1983) and Mustapha (1990) took the approach by classifying the duties and skills of the site manager into categories of tasks in their research. Their justification for this approach was that a detailed breakdown of task would be extensive and too complex. Whilst Mustapha identifies that the skills of effective site managers are

behaviour, technical or traditional activities, communication, human management and networking skills, Brown suggest from his study that that the common core criteria of effective site managers as are quality management, communication, technical competence, leadership, decision-making, communication and site safety skills.

The Chartered Institute of Building CIOB, (1965) classified the duties of site managers into knowledge and skills categories to describe the duties of site managers at the workplace. They group site managers' duties as according to knowledge categories in management, personnel, human relations, equipment, production, technology, quantity surveying and law, and proposed a corresponding list of skills to each category of knowledge. This is shown in Table 2.5.2.1

The Construction Industry Training Board, CITB (1988) (in Sorrel 2000) produced another list of activities of personnel involved in supervision and management from the findings of their research. Their activities, which also include the activities of others site personnel, appears to complement the list proposed by CIOB. Lemarie (1982) also produced his list of common task carried out by site managers in his article that includes more of task than that suggested by CITB or CIOB. Among the more recent research in this area were those by Houlston (1999), Burgess (1999) and Sorrel (2000). The summary of findings from these studies are analysed and shown in Table 2.2.5.2.

Farrell (1999) conducted a similar study in his research. He concluded that there has been ambiguity in the understanding tasks and roles performed by site managers and proposed the holistic conceptualisation of the site managers' duties as shown in Figure 2.5.2.1.

KNOWLEDGE	SKILLS
Management	*General Management*
	Organising
	Communication
	Site Office Management
	Site Cost Control
Personnel	*Selection of Operatives*
	Man Management
	Working Rules Agreement
	Safety
	Training
Human Relations	
Equipment	*Plant Use of Maintenance equipment, Mechanical plant and transport*
Production	*Production Planning*
	Site organisation and layout
	Construction Materials
	Site quality control
Technology	*General Building Technology*
	Technology and technical drawing
	Structural Engineering (within limits of site management)
	Electrical installations
	Setting Out and Levelling
Quantity Surveying	*Standard Method of Measurement*
	Compilation of Bills of Quantities
	Preparation of interim and final accounts
Law	*Building Regulations*
	Bylaws
	Contract laws

Table 2.5.2.1: Knowledge and skills of people in Site Management (CIOB, 1965)

STUDIES	ACTIVITIES, TASKS & SKILLS PERFORMED BY SITE MANAGERS																
CITB (1988) (Activities of personnel in supervisory and management in construction)	Tendering new works	Design of Building Services	Sales & Marketing	Negotiation with Suppliers & Sub-con.	Employee recruitment & dismissal	Dealing with Authorities	Forecast future needs of resources	Dealing with Planning & Building Control Officers	Financial planning & control	Measure valuations & Bonus Payment	Employee Training	Design of construction & temporary work	Assess Employee	Progress control of work	Quality Control	Industrial Relations	Managing people
Lemarie (1985) (Common tasks carried out by site mangers)	Site briefing on all contract matters prior to starting on site	Request const. courses	Setting-out	Liaison with planning staff over methods of construction	Deciding site layout	Quality Control	Liaison with Building Team	Establishing site morale	Attending meetings	Manage materials	Engaging direct labour	Keeping accurate records	Record Variations	Site Safety	Ensuring smooth flow of resources	Arrange work program-me	Maintain Industrial Relations
Houlston (1999) (Daily duties of site management)	Site Safety	Supervise site	Maintain Quality	Maintain & distribute information	Liaison with staff	Liaison with Clients	Making profit	Maintain programme	Materials call-off	Site recruitment	Establishing the site	Materials & Plant cut-off	Supervise Sub-contractors	Maintain labour demand	Motivate Site Operatives	General Admin. works	Solving disputes
Burgess (2000) (Activities carried out by site managers)	Planning & Program work	Forecast future needs	Assess Employee	Materials management & control	Financial planning & control	Quality Control	Employee Training	Managing People	Managing Health & Safety	Industrial Relations	Negotiate with Suppliers & Sub-contractors	Plant selection & control	Dealing with Authorities	Technical duties	-	-	-
Sorrell (2000) (Site management Skills)	Managing Health & Safety	Commun-ication	Managing people	Making correct decisions	Planning	Understand construction techniques	Reading & understanding drawings	Checking & controlling standards of work	Carrying out Administration as necessary	Using Information Technology	-	-	-	-	-	-	-

Table 2.5.2.2: Findings from studies on activities performed by site managers

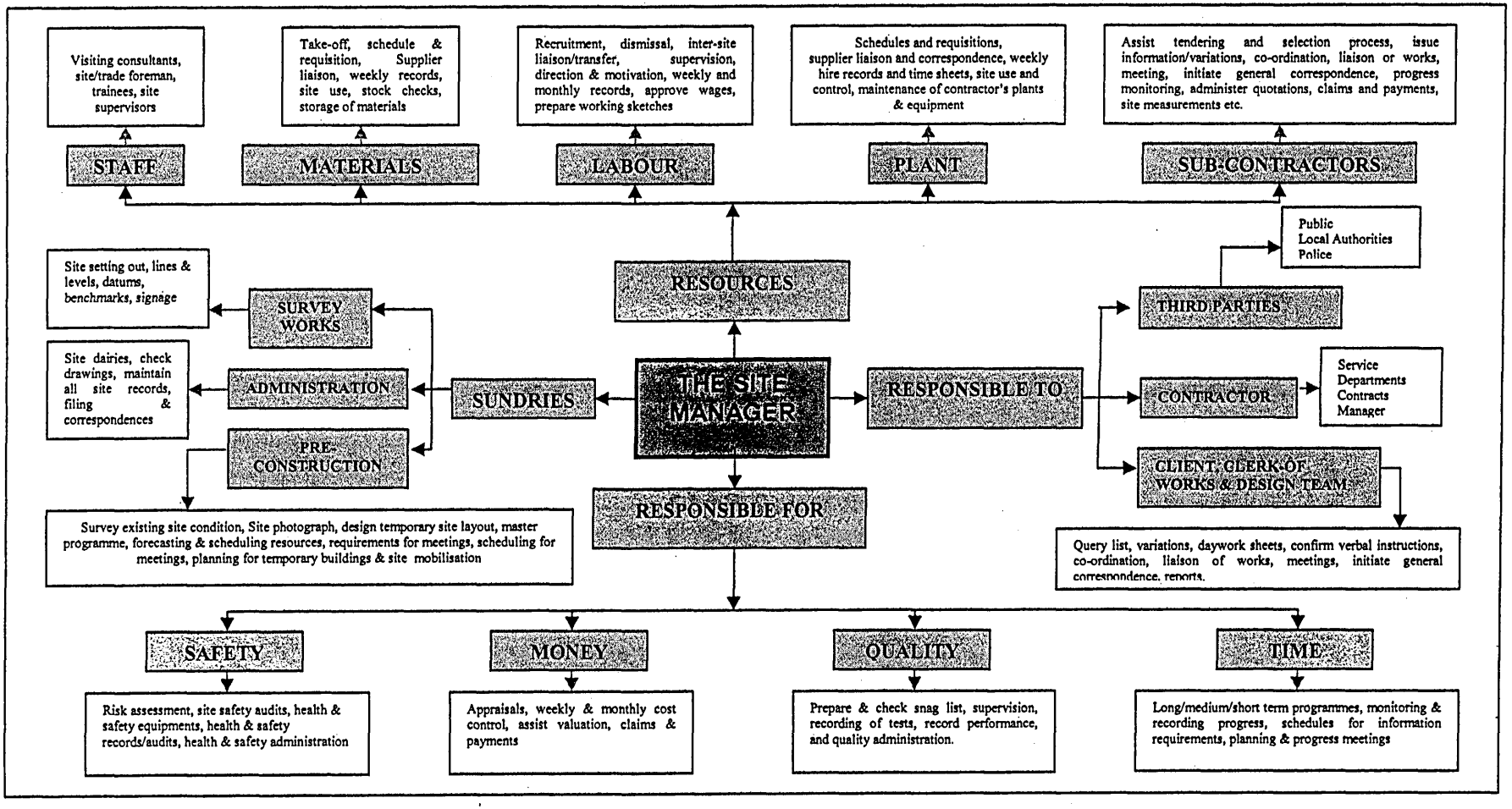

Figure 2.5.2.1: Roles & tasks performed by site managers in construction projects (Adapted from Farrell, 1999)

The critical analysis of these studies and literatures found that they were consistent in support of the views of the authors mentioned in 2.4.3 and 2.4.4. This augments the belief that site managers' roles demand them to possess a wide range of knowledge and skills to enable them to discharge their job successfully. The incidence of each study producing dissimilar results is understandable given the different approaches that measured different traits and surveyed different population of site managers at different times. Viewed from the Fayol's perspective, these studies converge to support the view that the role of site managers can generally be broadly classified into the tasks of planning, organising, controlling, communicating, coordinating, communicating and those related to safety. However, when contrasted against the Mintzberg's 'work activity' approach, the classification of tasks does not seem to describe the actual work of site managers. This was clearly apparent when the classification of knowledge outlined by CIOB was contrasted against the other studies discussed (see Table 2.5.2.1 and 2.5.2.2).

The CIOB list appears quite comprehensive in describing the key knowledge required of site managers. Its list of skills contrasts quite significantly against the findings of the other researchers. Overall, technical skills relating to the undertaking of site management tasks such as setting out, quality control, and resource management etc., required of the site managers are quite consistent but some new skills have emerged, expanded or taken prominence. This is in particular reference to human management skills, dealing with other parties related to the project and skills in IT. The different times of the research and the variables contributed by the changes that have taken place in the industry were suspected to have influenced the varied research findings.

The findings from this study further support the studies by Farrell (1999) in conceptualising the roles and tasks performed by site managers in construction projects. There have also been little consensuses as to which skills or tasks are most important although there were attempts by the research by Houlston and Sorrell's studies establish this from their research. Given the small population of the site managers studied and the absence of any other literature or research to support their findings, their suggestion about the order of importance of the skills or tasks were not considered for this research.

2.5.3 Application of the term 'Construction Site Managers'

A range of job titles has been used to describe the person performing the duties of construction site managers within the industry. Without any specific mention to the job title, the CIOB (1965) describes the role of the person performing site management duties at the construction site as:

> "*The person with the responsibility for managing the work of the operatives under his control, for co-ordinating and controlling the work of subcontractors and specialists on the site, and for the general administration in accordance to the requirements of his employer*",

Millward *at el* (1995) identify the personnel in-charge of construction production operations as traditionally known as the 'general foreman', but later came to be known as the 'site agent' or the site manager'. Calvert *et al* (1995) see site personnel performing the role of managing the construction process as the 'construction manager' or 'site agent', 'work package manager' or 'general foreman'. Similarly, the DoE (2004) considers site managers as also building managers, construction managers or site agents.

Bateman (1985) and Mustapha (1990) both studied the relativity of the terms used to describe the site manager and found that the project types and sizes have very strong influence over the use of the job title. Bateman observed that a craft based site agent might be the site manager in a small refurbishment project, whereas, for a large multi-million shopping complex the site manager might be called a project manager with a team of supervisors reporting to him. He also observed that a site manager from a small firm, if transferred to a large firm, would only be considered in the section manager's role. In agreeing with Bateman, Arshad (1997) adds that on larger sites they might be subordinate line management personnel having sectional responsibility for site management and referred to as the 'section site manager'. In supporting the observations of Bateman, Mustapha's research suggest that the site manager responsible for running a small refurbishment project would only be able to run one of the operations going on a complex project. In such projects he may be considered as only as the site agent.

2.5.4 Definition of construction site managers adopted for the research

It was conceived that defining construction site managers would necessitate understanding the whole spectrum of management functions they perform in their job. As exemplified from the discussions in 2.5.2 and 2.5.3, and Table 2.5.2.2, there has been attempts to conceive what site managers do in the job from various perspectives but it was apparent that no one particular approach was adequate to holistically describe their job.

Quantifying the duties performed by site managers can be a complex process as exemplified in the discussions in 2.5.2 and 2.5.3. From the perspective of 'work activity', managing construction resources such as labour, materials, plants, sub-

contractors and staff are among the common key work activities performed by site managers in ensuring the project operation within their control meets the project objectives of time, cost, quality and health and safety. In some other construction projects, site managers may need to perform other tasks such as industrial relations, employee training and dealing with authorities, etc. There was little evidence to suggest the need for them to be involved in any commercial duties apart from cost control but the need for them to be able to manage people was very evident. There were also evidence to suggest that most construction site managers are expected to undertake a certain level of sundry duties (such as setting-out, administration and pre-construction activities) and to be responsible to third parties (which includes the public, local authorities, police, clients, the design team/consultants, clerk of works and the main contractor). This tends to be dependent upon the type of project situation encountered and/or the type of organisations within which they are employed. Whilst performing these tasks, site managers assume different set of roles, which ranges from interpersonal, formal/informal and decisional roles.

In essence, the culminating finding from the discussions supports Farrell's (1999) view that there is some ambiguity in understanding the duties of site managers from the perspective of their roles and tasks. This augments the views of Gibbons (1987) that:

> *"The traditional way to expand on a job description is to write a job specification. However, he added that, this does not seem to be helpful in understanding the role of the site manager in any great detail. One reason for this is that they are usually too brief"*

The varied nature of the site managers' job coupled with the different possible approaches possible for conceiving what their duties are can be subjective and tends to

blur the demarcation between their roles and tasks. On this basis and for the purpose of the research investigations, the research does not suggest the detail breakdown of the roles and tasks performed by site managers, but the model proposed by Farrell (1999) in Figure 2.5.2.1 would be adequate as the terms of reference for the research investigations.

There is no intention to limit the term 'construction site managers' for the research. The qualifying criterion adopted to refer the site managers are; he is the personnel mostly based on site, responsible for managing the construction production operation and its resources, guide the production process towards a certain determined goal, and in the process manage people, information and the decision-making process. The term 'construction site managers' will be used to cover all that is mentioned above.

The definition of site manager adopted by this research is:

> "*The person managing the construction production process at the construction site to achieve the satisfactory project targets of the contract notwithstanding the cost, type and size of the project*"

2.6 CHAPTER SUMMARY

The Chapter has examined and underlined the significance of the construction industry to the UK economy. The under achievements of the industry which is a critical problem that needs to be address is also highlighted. Although significant measures have been taken to address the issues of under achievements of the construction industry, evidences suggest that it has not been able to produce the desired results to date. Central to this issue is the inability of the industry to develop and train its workforce to

the required quantity and level of performance. This remains as one of the persisting problems that plague the industry.

The important role of construction site managers and their important contribution to the success of construction projects was underlined. But they are in short supply as with other professionals, managers and skilled manpower within the industry. The rate of supply is diminishing while the industry's demand is growing. The recent initiatives taken to promote and improve training within the industry have so far appeared to be ineffective.

The demanding and complex project setting in which site managers operate exacerbated by changes and reforms taking place within the industry implies that the training of site managers is very complex. Within the prevailing scenario when the construction industry is faced with the problems of shortage of manpower and need to train its manpower, the training of site managers is unique by its own nature. This finding further suggests the need for a clear understanding the roles of site manager's in-order to identify their actual training needs accurately and for their training schemes to be designed correctly.

CHAPTER THREE
Training and Training Best Practice

3.1 INTRODUCTION

Site management, the factors that shape the roles and tasks of site managers, and the definition of the site manager were discussed in the last chapter. This chapter presents the discussions on training and training best practice for the research.

It begins with the discussions on literature and theories related to human and organisational development to outline the framework for understanding training. The definitions of education, training, development and learning were investigated to demarcate their similarities, differences and inter-relationships. This was then followed by the discussions on training, best practice and training best practice.

The literature section on training provides an in-depth review of the fundamentals from which current concepts on training were developed. The importance of training within the context of the management of organisations and their people were also underlined. The discussion on best practice provides an analytical analysis of its definition and concepts. The factors that have contributed to the growing importance of application of best practice within management and training today were also highlighted. The discussion on training best practice was approached by firstly outlining the training process. The underpinning theories and concepts related to each of the training process were then critically examined and discussed, drawing references from the earlier discussions on training and best practice. The emergent findings were then summarised to establish the conceptual framework of training best practice for the research.

References used in the discussions are primarily publications in the study of management from journals and textbooks for the obvious reasons that more advanced studies in this area are available in the field of management. The chapter concludes by presenting the rationale for adopting training best practice approach for the research.

3.2 TRAINING, EDUCATION, DEVELOPMENT AND LEARNING

There has been considerable ambiguity relating to the distinction that exists between the application of the definition of education, training, development and learning. Therefore, it is necessary to discuss the context from which these terms can be adopted since they are related to the stance taken by this research.

3.2.1 Education

There is a comprehensive body of literature to draw on to define education for this research (Allman, 1982; Peters, 1972; Tough, 1981; Martin, 1998; Matrix, 1998, Hughey and Mussnug, 1997). Particularly cited within these literatures were the argument that many early definitions of education tends to advocate a front-end model of education, which put the idea that education occurs during the formulative years, and when socially matured, education ceases.

Peters (1972) claims that it is too complex to define education. He suggests that being 'educated' as a state that individuals achieve and that education is a set of process that leads to this state. He adds that the criteria for considering education must include that it must involve a learning process, which is not a single event and it is a planned humanistic process that must involve understanding.

In agreeing with Peters, Jarvis (1995) adds that education must not be restricted to a specific learning process, to a specific time in life or to a specific location. Coombs and Ahmed (1974) distinguish education from informal and non-formal education by identifying formal education as highly institutionalised chronologically graded and hieratically structured education system. Their intention was to differentiate this initial formal system from other forms of life-long education.

3.2.2 Training

The Department of Employment in their Glossary of Training Terms (in Anderson 1993) defines training as:

> "..... *the systematic development of the attitude, knowledge and skill behaviour pattern required by an individual in-order to perform adequately a given task or job*".

Thomson (1990), Gravan *et al* (1995), Reid and Barrington (1994), Matrix (1998) and Harrison (1993) were common in defining training as a deliberate, planned and systematic process to modify, develop knowledge, values, attitude, techniques and skills through learning experiences, to achieve a set level of performance in an activity or a range of activities. Consistent in their views were the belief that training must be derived from understanding the learning process and if successful will speed up the learning process. Training is focused to make the individual proficient by instruction and practice. It is a job specific form of education which can be general or organisation specific but does not necessarily relate to the job that the individual undertakes.

Rogers (1986) defines training as having narrow goals and specifying the 'right' way of doing things. Becker (1962) argues that while general training is applicable to many

employers, specific training is the specific acquisition of a skill valuable to one employer only. While Applebaum and Reichart (1997) agree that training can be a subset of learning, they warn that training alone is not powerful enough to develop people in organisations. Thomson (1990) maintains that formal training entails deliberate and structured presentations. Hendry *et al* (1995) draws the distinction between initial, continued skill training and re-training, whilst Axtell *et al* (1997) suggest that initial transfer of skills is an important pre-requisite of subsequent skill application at the workplace.

3.2.3 Development

The Oxford Dictionary defines development as:

> "*An act or process of developing; a gradual growth or unfolding*"

Within the human resource management and development context (Mullins, 2002; Martin, 1998), it is taken to embrace both the outer reality or the environment and organisational goals and the inner reality of the emerging individual self. Many of the notions of development points to the subject of expanding one's potential through conscious and unconscious learning process, and with the provision to enable the individual to take up a future role within an organisation. Baum (1995), Lauermann (1992) and McIntosh (1994) commonly agree that development is more focused to the learner than the learning. It is not concerned with the uniformity of learning outcomes as training is but concentrates on enhancing jobs by enhancing employees.

Many of the notions of the development points to the issue of expanding one's potential through conscious and unconscious learning process with the view for enabling the individual to take up a future role within an organisation. Pedler (1995) defines

development as making the most that one can out of opportunities in both the outer and inner sphere, while Baum (1995) characterises development as a process that can take place at any time and is not constrained by formal parameters or at specific points within an individual's life cycle. Neither it is confined to the classroom or coaching situation, nor is it situational term restricted to planned or formalised group sessions.

3.2.4 Learning

Merrian and Caffarella (1991) suggest that there is a great difficulty in defining learning largely due to the lack of a widely accepted definition. They assert that learning defies easy definition and simple theorising because it covers such a wide spectrum of conditions. In supporting this view, Gravan (1997) maintains that learning is not a unitary concept and that many perspectives to learning exist and are focussed on different types of learning.

The notion that learning can be defined in different ways by different theoretical school of thought was also found. Martin (1998) and Matrix (1998) defines learning as a process by which behaviour changes as a result of experience. Bandura (1986) on the other hand sees learning as a relatively permanent change in behaviour or in behaviour potential. This results from experience that is partially mediated by the opportunity to use learning, the social encouragement to use it and the learner's ability to retrieve it. Conversely, Jones (1994) argues that learning does not necessarily mean change by suggesting that even when it results in change it is not necessarily behavioural in nature.

Rodgers (1986) and Jones (1994) points out the tendency for many learning theories to overlook the learner's cognitive abilities, motivation to learn, experience of adult learners and their preferred learning styles. Hicks (1996) suggest that experiential

learning and action learning are among the most effective means of acquiring professional education and training. Perceiving learning within the organisational context, Geertshuis *et al* (2002) found from their research that learning takes place within complex social systems populated by a multiplicity of factors that influence perceptions of learning and performance outcomes.

3.2.5 Views taken by the research

It was evident that the extent to which distinctions can be drawn between the terms education, training, development and learning terms can be a subject of much debate. There appears to be no absolute definition to draw a clear distinction between them although there is a great tendency to view education, training and development as separate.

The application of the term education should not be limited but must also include non-institutionalised and non-structured education. Whilst education is perceived as limitless, there is a tendency to perceive development as the domain of the individual, his personal and career interest, its progression throughout his or her working life. On the other hand, training is largely considered as the systematic improvement of the individual to meet the demands of his job, predominantly job-related and conducted on employees to meet the needs of the individual, the organisation and/or the industry.

While the nature of the learning process is varied and can be contingent to where the term is applied, education, training, and development are all essentially concerned with learning.

3.3 THE CONTEXT OF TRAINING

3.3.1 Learning within organisational management

Handy (1999), Mullins (2002), Matrix, (1998), Mabey and Iles (1994), and Osborne (1996) are consistent in maintaining the significance of training of the people in organisations. The notion that training spawns within the realms of learning within the context of human and organisation development; and education, training and development of people as the effective vehicles for learning which in-turn will contribute to quality and performance improvements of organisations were found to be their common theme.

Support for the view that training must be an integral part of the organisation's development strategy and should be made available for people in the organisations has been unanimous. Wills (1994) assert that training must be a key element of the organisational philosophy while Beaton and Richards (1997) assert that learning, development and training contribute to organisational success. Bechtel and Squires (2001), Davis and Davis (1998), Johnson (1997) sees training as one of the key tools for change management, while Martin (1998) stresses that training assist to retain staff that might otherwise leave. Bentley (1991) adds that only continuous training can assist meeting the changing demands at the workplace as knowledge gained has a limited useful life span.

The D*f*EE (1997) further impress that well-educated and continuously well-trained workforce is the pre-requisite for competitiveness, but Osborne (1996) cautioned that training is not the remedy for problems of faulty organisations or training employees who do not wish to learn. Axtell *et al* (1997) in appreciating the benefits of training,

suggest that the initial transfer of skill during the training is an important prerequisite of subsequent application at the workplace, and in the long term, individuals with more autonomy in their jobs are more likely to apply the learned skills.

3.3.2 Training and change

Change has been one of the key features of the dynamic environment in which organisations exist. The study of change is not new and has been synonymous with the study of organisations itself. It was towards the end of the last century that it became more profound from concerns of challenges to keep pace with accelerated pace of change that has contributed to the rapid widening skill and competency gap.

Management scholars (Toffler, 1991; Senge, 1990; Pedler *et al*, 1991) were unanimous in the view that change is imperative, failure to keep abreast with change will result in severe implications to individuals, organisations, industries and economies alike. They warn that this can only be addressed through the efficient and effective management of people through the process of continuous learning. The conception that change is complex; is often a paradoxical process and whenever there is change it has human consequence which must be tackled in a systematic way, has also been one of the central features in their literature. In re-emphasising this view, Argyris (2000) stress that the better the learning the more likely are organisations able to correct errors and to be more innovative or knowing the limits of their innovation.

The universality of views that education, training and development, as the most effective strategy to bridge the skill and competency gap brought about by change, were the common proposition in the literatures researched (Gravan, 1997; Pickett, 2000; Bennett and McCoshan, 1993; Appelbaum and Reichart, 1997). In supporting this

belief, Henderson (1997) emphasise that learning and re-learning must take place continually, and Cummings and Worley (2000) suggests that this entails a new paradigm in organising and managing organisations.

3.3.3 The learning dimension in training

Learning concepts spans across a very wide area of study and it is beyond the scope of this research to discuss this in detail. However, as understanding the key concepts of learning is important for understanding training, the following literature review is presented to underline the underpinning concepts of learning.

Earlier learning concepts

Mullins (2001), Martin (1998), and Torrington *et al* (2002) identify that the later learning concepts on learning developed by management scholars today are rooted form principles developed from the works of earlier leading psychology behavioural scientists such as Pavlov, Watson, Thorndike and Skinner.

Pavlov's *Theory of Classical Conditioning* demonstrates how instinctive reflexes could be 'conditioned' to respond to new situation and stimuli, Watson's *Law of Exercise and Association* refers to the process that occurs when two responses are connected together and when repeatedly exercised, illustrates the power of habits and the acceptance way of behaving. Thorndike's work drew attention to the outcomes of learning while Skinner's *Theory of Operant Conditioning* proves that response could be learned when the behavioural response is associated to a reward (or reinforcement) and could be broken down with punishment.

"Learning Cycle"

Cognitive psychologists argue that the behaviourism is the 'passive' approach to learning and cognitive 'active' elements such as curiosity, the desire to learn and feel must also be considered in understanding learning. Mullins (2002) cited the works of Kholer and Tolman who proved that animals and humans were capable of cognitive behaviours, and Piaget who identified the stages of intellectual growth in humans.

This spurred David Klob (Klob, 1984) who based his research on the works from Piaget, Dewey and Lewin (proponents of behavioural approach to learning), to argue that the cognitive theories on learning ignored the role of consciousness and subjective experience. He further researched and proposed the model of 'experiential learning cycle', which he believes reflects a better model for understanding learning. This model was further improvised by Mumford (2000) who suggest that the learning veers away from the cycle after repeated exercise, and is now among the most frequently used model in management literatures today. This is shown in Fig. 3.3.3.1.

Although there were noted variations within the models, the emphasis that there is no end to learning; learning needs to be active, exploratory and test the environment (activity); the importance of reflections and internalisation (reflection); the useful way of understanding problems in the learning process (theory building) and using what have been learned (putting it into practice) have remained as the fundamentals of learning.

From another perspective, Mullins (2002) conceives learning from the personal dimension that is related to the factors in the 'environment' surrounding the individual. This is shown in Fig.3.3.3.2.

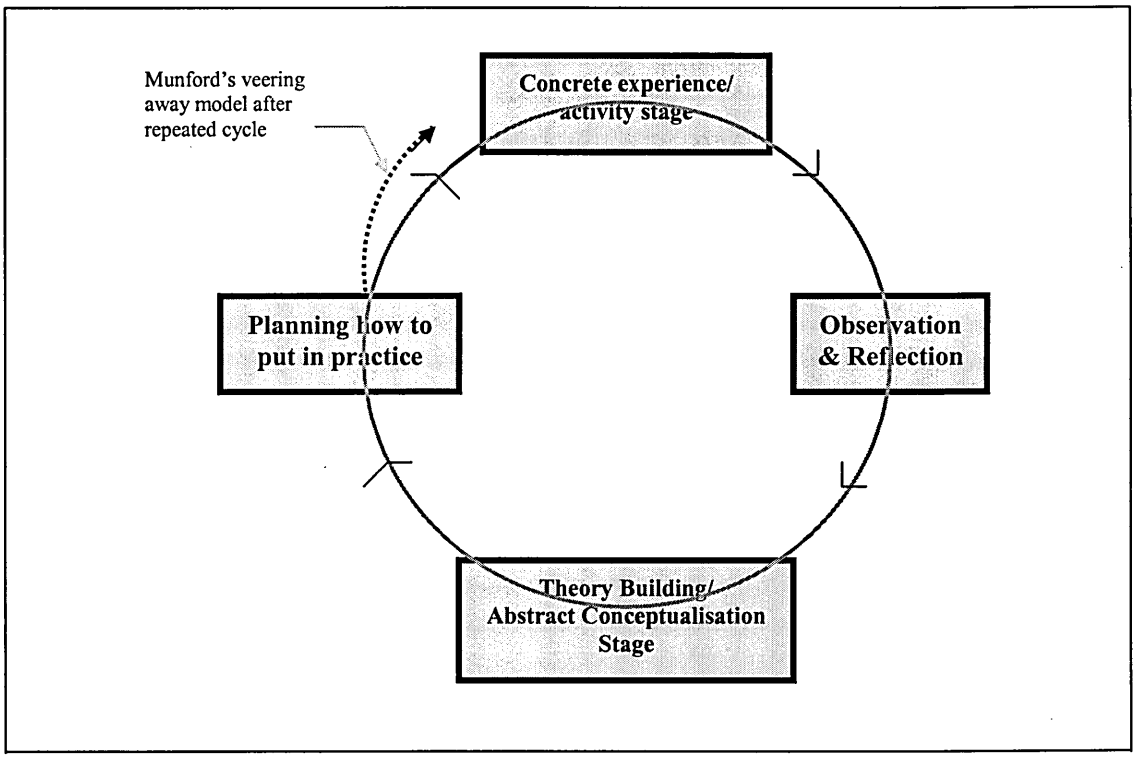

Fig. 3.3.3.1: The Learning Cycle
(Adopted from Klob 1984 and Mumford (2000))

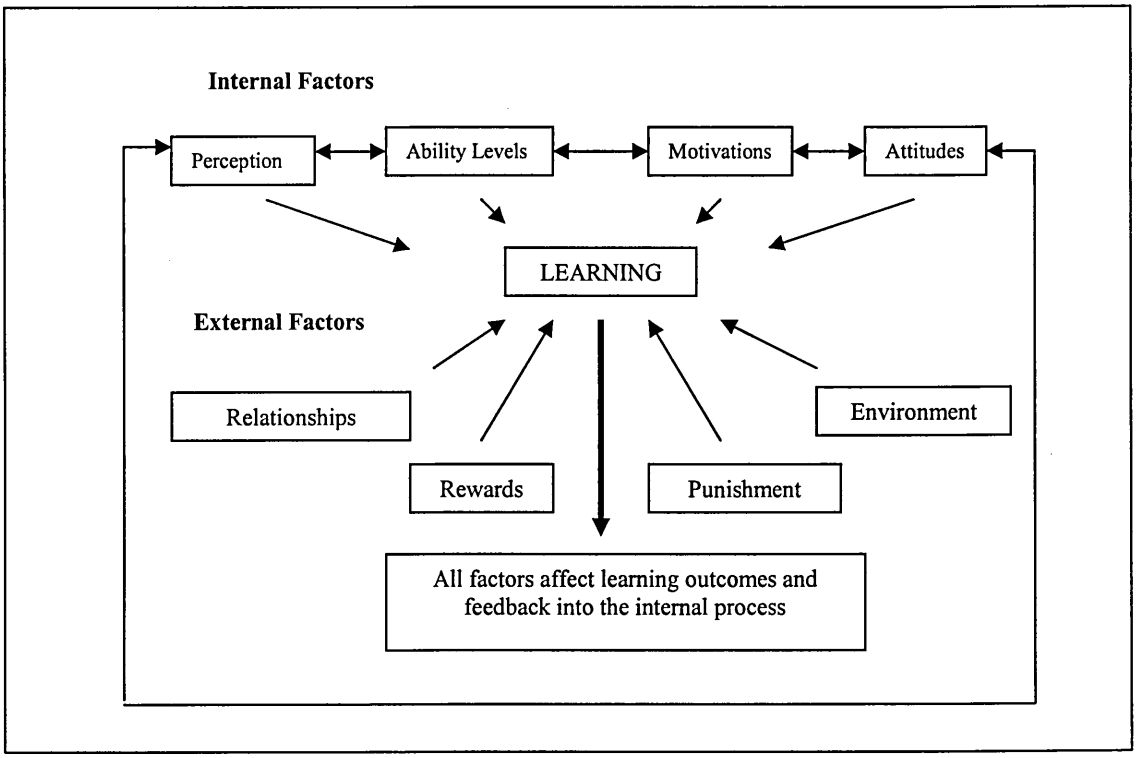

Fig. 3.3.3.2: Mullins simplified view of the learning process (Mullins, 2002)

The individual's learning dimension

Abdullah (2001), in his review of learning literatures in his thesis, notes that the individual learning process is associated with the individual's sensory input where information coming from the senses is transformed, produced, elaborated, recovered and used. He offers his conceptualisation of the individual's learning process as shown in Fig. 3.3.3.3

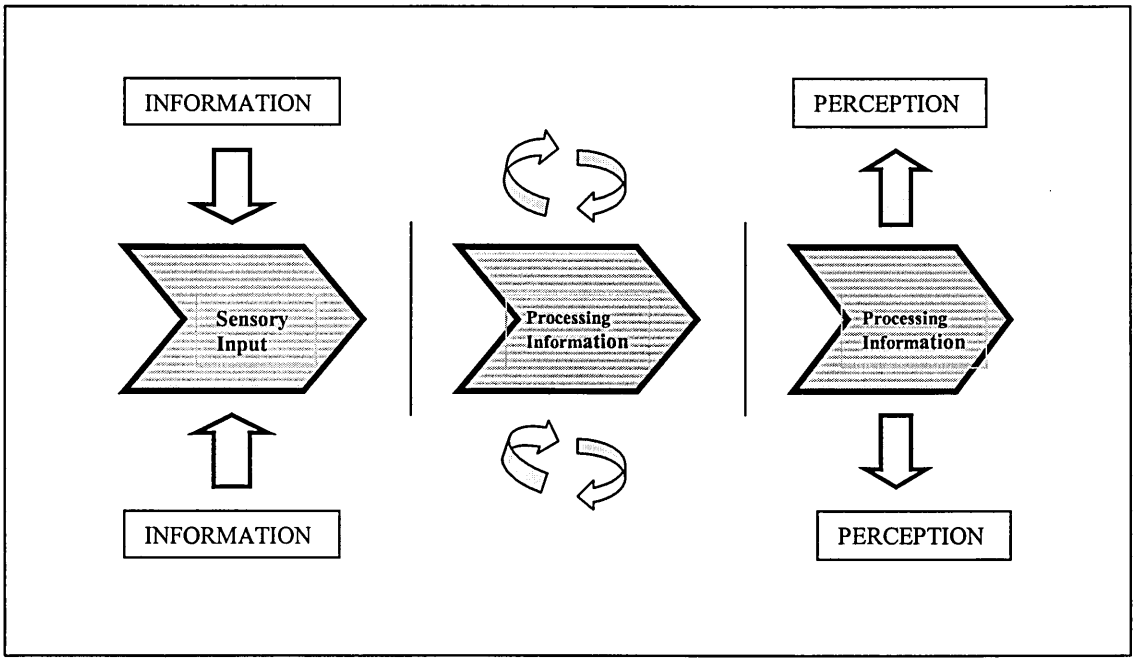

Figure 3.3.3.3: The individual's learning process (Abdullah, 2001)

"Learning Curve"

The theory of learning based on the 'learning curve' is another important element that has added another dimension to understanding learning (Martins, 1998). It advocates the view that individuals tend to learn a new task more rapidly at first and the 'learning curve' is steep, and then gradually plateaus after acquiring significant experience. A variation which suggests that in reality the learning process is characterised by a series of learning curves and loops have also been developed (Torrington *et al*, 2002). This is illustrated in Fig. 3.3.3.4.

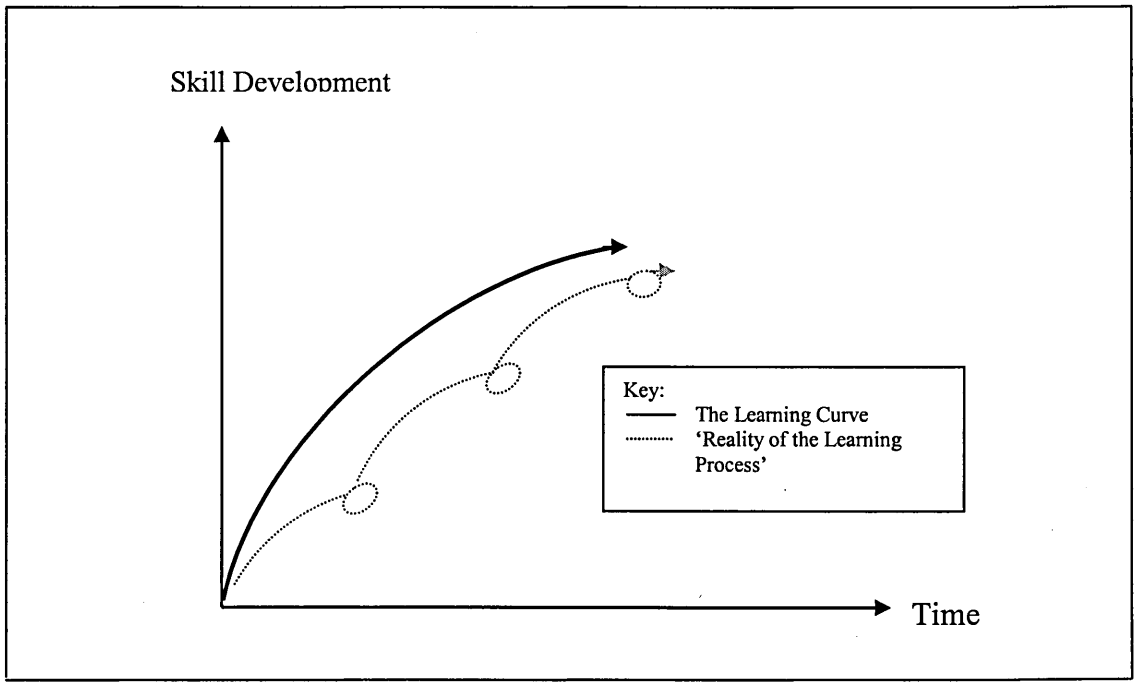

Figure 3.3.3.4: The Learning Curve (Adopted from Martins (1998) & Torrington *et al* (2002))

Incidental and intentional learning

Another important feature of learning is the concept of 'incidental' or 'informal' and 'intentional' or 'formal learning' (Nedler and Nedler, 1999; Thomson, 1990). The notion that 'incidental' or 'informal' learning is the process where the learning occurs during the course of doing things, whilst 'intentional' or 'formal' learning that entails deliberate and structured presentations. Abdullah (2001), Bee and Bee (1998) and Reid and Barrington (1999) are common in supporting the belief that to promote effective learning, individuals should learn not only by adaptation but also through manipulation or 'interventions'.

Single, Double and Triple -Loop Learning

The *Single, Double and Triple-Loop Learning* theories are amongst the most commonly referred in the study of organisational learning. It emphasises the importance action learning through understanding the relationship of between people and organisations

through the process of experiential learning, exploration of thinking, reflection and transformation.

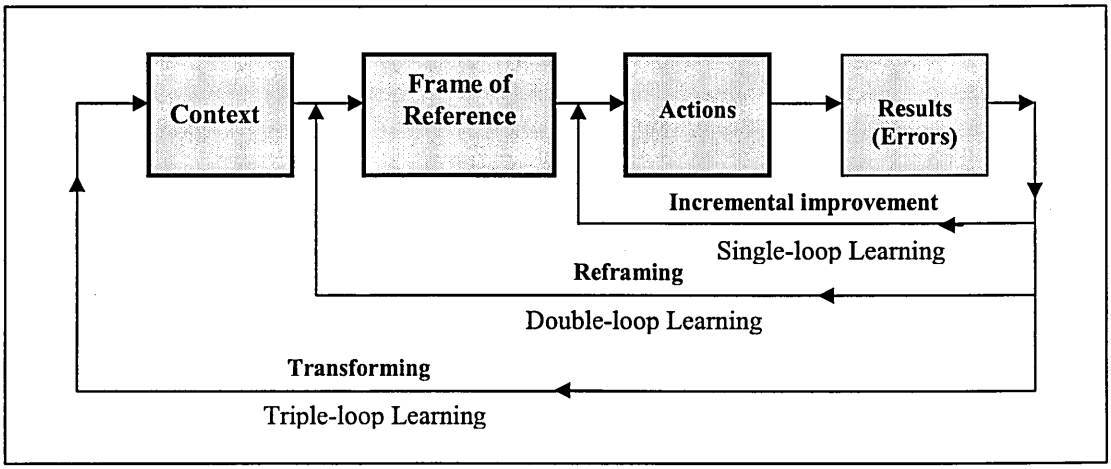

Figure 3.3.3.5: Single, Double and Triple-Loop Learning (Adopted from Argyris (1978) Argryis and Schon (1996) and Welsh (2004))

Single-loop learning suggests that an organisation will be able to learn when the organisational entities i.e., the individuals, groups or the organisation itself are able to modify their actions by reflecting the difference between expected and obtained outcomes set out to bring about incremental changes within the organisation. Double-loop learning suggest interrogating and reframing the governing variables to the organisations (i.e., the organisation's frame of reference such as systems, strategies, values, assumptions and policies, etc) for the organisation to improve. Triple-loop learning promotes learning with the development of new knowledge about how to engage in double-loop learning.

Whilst incremental change can be achieved through single-loop learning, the end result of double-loop learning should be increased organisational effectiveness in decision-making and better acceptance of failures and mistakes. Triple-loop learning involves transformational learning with the development of new knowledge about how to engage

in double-loop learning. This may often lead to radical changes to the governing variables culminating from the actions that have taken place.

Culminating the learning framework for the research

It was concluded that understanding how people learn is very important and this understanding should underpin any training provision. Understanding learning can be complex as people can learn in many ways and learning takes place in different environment and dimensions. It involves the function of the inner workings of the human mind but its invisibility can create difficulties in understanding learning.

For the purpose of this research, it was conceived that the approaches promoted by psychologist in understanding learning, as drawn from the discussions within this chapter, is the approach to circumvent this. Central to understanding learning which relates to training are that humans can be 'conditioned' to learn and that responses can be learned when their behavioral responses are associated with rewards/reinforcements. Human's cognitive abilities are significant elements for learning through which incidental, experiential and intentional learning can take place. They learn through their sensory input when information they acquire are transformed and processed to form perceptions. 'Active' learning can be promoted through formal and informal learning which promotes the experiential learning process. The learning acquisition process takes the form of a curve where the learning plateaus after acquiring certain experience. Learning is cyclic in nature and can be continuous. This can be characterised by a series of cycles which joins to form loops which support continuous learning. Within the organisational context, organisational learning can take place through the single, double and triple-loop learning processes.

3.4 BEST PRACTICE

Appreciating the need to underpin the research approach with learning concepts parallel with change taking place within the construction industry, the following literature were drawn as the frame of reference to structure the research:

Change has forced organisations to experiment and research to identify new management approaches to improve. Management today recognises that ideas, their generation, refinement and application in the real world circumstances can make a huge impact on product and business results (Dauphinais and Price, 1999; Pedler *et al*, 1991; MIM, 2001). One important outcome emanating from this is the concept of best practice in management, which was developed as a tool for managing change (Zairi and Whymark, 2000; DTI, 1992; DTI, 1998).

It came to the fore with dominance of change management thinking. It was developed on the conviction that in the changing environment when business becomes more and more competitive, no organisation can stand-alone and be disengaged. The key to competitive edge is to promote knowledge-based approach to management through the process of continuous development supported by learning and re-learning, adapting innovation and measuring performance

Critics that challenge best practice were noted. Fitz-Enz (1997) underlines the critics that argue the danger of best practice being conceived as simplistic solutions based on what works in other organisations which may not match the different needs of another organization and that best practices based on past successes may be anachronisms. Coding (1997) maintain that it is difficult to analyse or compare performance to benchmark best practice, the domination of best practice concepts in today's

management has been very evident and it seems to be accepted as the ideal approach for management in all circumstances. This was exemplified by literatures identified by this research in; Doley *et al* (2002) from their study on best practice in product development; Management Development Review (1997) in their case study on best practice approach in people management; Shemwell *et al* (1998) on best practice for creating sales culture; O'Sullivan *et al* (2001) n their study on expatriate management in multinational companies; Andrea *et al* (2003) on best practice in tourism, hospitality and leisure management; Landry (2000) who discusses best practice as a toolkit for creative planning in urban regeneration and Department of Trade and Industry (DTI, 2002b) in their implementation of Rethinking Construction and Construction Best Practice Programme.

Jarrar and Zairi (2000) observe that there is no single 'best practice' because what is best for one may not be the best for another. They stress that what is meant by 'best' are those practices that have shown to produce superior results; selected by a systematic process; judged to be exemplary, good or successfully demonstrated and best practice are then adapted to fit a particular organisation. They conclude that best practice is always contextual as 'best' is a moving target in today's world. It is situation specific and is rarely the ultimate that can be achieved. While there is a considerable relativity to accurately ascertain 'best', Dooley *et al* (1998) from their study note that 'best' are derived via either rigorous empirical studies, case studies and single-company descriptions or declared 'best' in a prescriptive manner by experts. This can be in any form of technology, intellectual property, materials, machines, plant and equipment, components, immediate and end-product, or it could simply mean better process. Matusik and Hill (1998) associates 'practice' in best practice as a tactic or method that has been shown through real-life implementation to be successful.

DTI (1998), in promoting best practice approach to UK industries, accredit the success of successful companies in the world to their ability to take an idea or technology or a process that works somewhere else, and with refinements made it their own. Best-known examples are many of the Japanese technology and automotive giants, and "copy-cat' competitors from other countries in East Asia. These ideas were credited with laying the foundations of the Japanese post-war success and current examples of successful enterprise worldwide.

The promotion of learning and research as the basis of best practice was found to be consistent in the literatures researched. Bogan and English (1994) considers best practice to result of the experience of others and innovative adaptation. Zairi (1996) relates best practice as putting Total Quality Management (TQM) into practice by promoting continuous learning through sustainable innovation within organisations whilst Pierce (1995) sees best practice as concerned with the acquisition of new knowledge, understanding new concepts, developing new skills, or behaving in a changed manner. Zairi and Whymark (2000) attribute best practice to internal good practice that underpins the development of continuous development environment through the process of research and learning. DTI (1992) relates the outcome of best practice to profitability and growth that comes from the clear understanding of how business is doing and measured against the best. On the macro scale, DTI (1998) cited examples of how investments in research and the learning culture of USA, Japan, Canada, Germany and Italy have contributed to the success of their economies. Similarly within the construction industry, the Construction Best Practice Programme (DTI, 2002b) promoted by the construction industry reforms was instituted to promote learning, provide access to knowledge, guidance and advice to ensure that the industry

members have access to knowledge and skills required to implement change. Dooley *et al* (2002) observe that best practice diffuse both within and between organisations. They note that diffusion within an organisation refers to the rate of adoption of a best practice across multiple project teams or design programmes or organisational units within an organisation, while diffusion between organisations is related of adoption across multiple firms, within a particular industry and across all relevant organisational types.

'Benchmarking' and 'best value' are concepts that have spawn and become synonymous with best practice. 'Benchmarking' is widely recognised as a technique developed based on best practice to determine performance in the critical areas of business (DTI, 1992; DTI, 1998; Zairi, 1996; Bogan and English, 1994). 'Best value', a sub-set of benchmarking, is widely used to indicate the performance level achieved by the produce or service against the standard set usually by best performers. It is commonly associated with the delivery of product or services of the highest quality, at optimum scale and at the lowest cost, to satisfy the demands of the consumers and the standards imposed by regulators (Chivers and Thebridge, 2000; Karlof and Ostblom, 1994; McAdam and O'Neill, 2002).

Drawing from the above and in contending the need to structure the research within a recognised frame of reference, it was conceived that best practice approaches discussed would be most appropriate. In noting the critics on best practice, the research posits that whilst these would be the drawbacks if the best practice approaches are applied without careful considerations to the impinging factors, careful considerations would be given to match the best practice concepts drawn against the training investigated and by critically drawing concepts from current approaches which relates to training. The overriding benefits derived from adopting best practice approaches for the research is its promotion

of the exploration of different methods and/or processes in different circumstances, while maintaining focus on continuous learning and adoption of innovation in line with change. It operates within a flexible framework which encourages rethinking of the present approach and is applicable in most situations.

3.5 TRAINING BEST PRACTICE

In contending with the need to establish a tangible frame of reference for conceiving the application of best practice for the research, the key elements (i) defining the objectives of best practice, (ii) finding out where to look, (iii) choosing out the best way to obtain technology, and (iv) managing the transfer, as propositioned by DTI (1998), Jarr and Zairi (2000) and Coding (1997) was drawn for the research. The detail application of these principles to identify training best practice is discussed as follows:

Parallel with change management thinking, best practice has also dominated training. Within the training fraternity, best practice is largely considered the tool for managing training today. The basis for this recognition seem to stem from the absence of other recognised tool developed for managing change and the increasing concern that training provisions must to be able to satisfy the ever-changing needs at the workplace. To date, there has been no challenge on the suitability of best practice approach to training. Conversely, the current wide-ranging and detailed studies on training appear to be unanimous in support of best practice.

Progressing to discuss training best practice for this research, a comprehensive review on literatures on training was carried out. The approach to establish understanding of the whole training process was investigated. This was followed by an in-depth investigation on the key theories and concepts which underpin each training process.

The emerging themes from the discussions are then summarised and presented as the conceptual framework of training best practice for the research.

3.5.1 The training process

The training process, as shown in Fig. 3.5.1.1, is also commonly identified by other names such as 'training function', 'training model' or 'training cycle' and originates from the 'classical' or 'traditional training process' (Anderson, 1994; Bentley, 1991, Wilson, 1999).

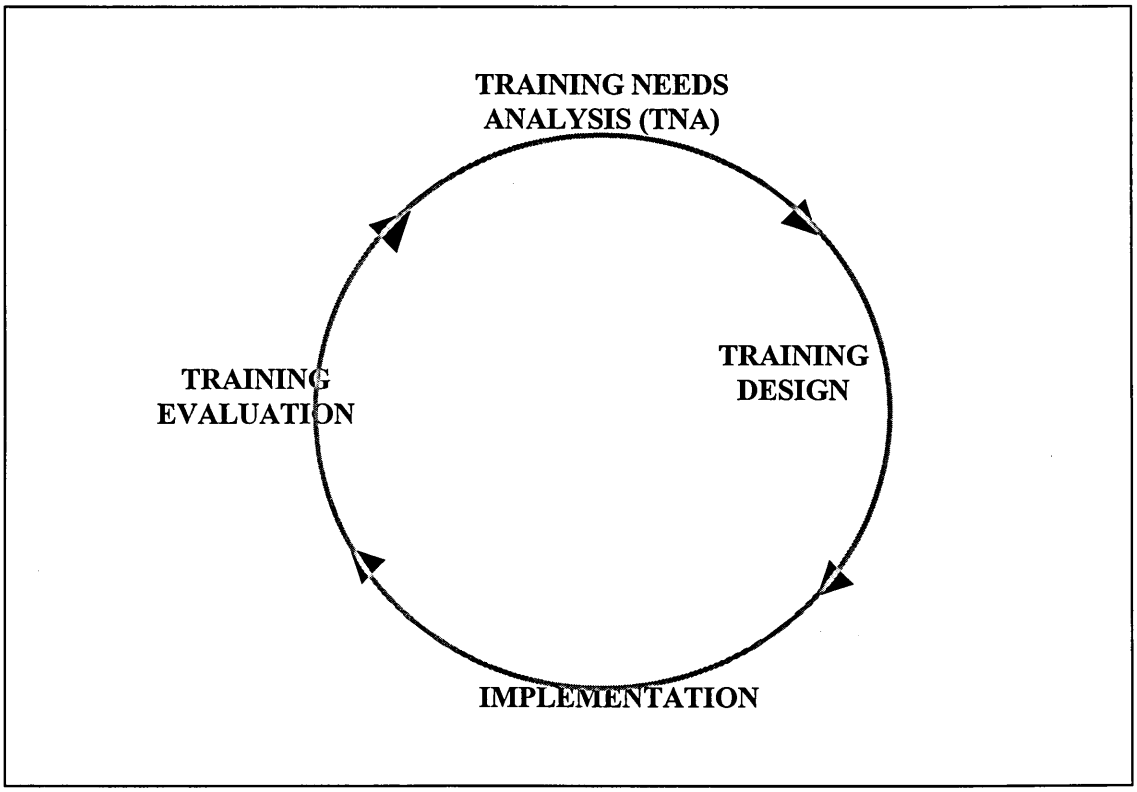

Figure 3.5.1.1: The classical/traditional training process (Adapted from Anderson (1994), Bentley (1991) & Wilson (1999))

The conception of the training process as a dynamic cyclic process in which the processes are inter-related and evolving was further supported by Spilsbury (in IES, 1995), Bentley (1991), Bramley (1996), Anderson (1994), Davis and Davis (1998), Rae (1995), Pierce (1995) and IPD (1998).

As more research were developed to provide a deeper understanding on the training process, most recent literatures (Osborne, 1996; Anderson, 1994; Johnson, 1997; Hernes, 1998; Bentley, 1994; Bee and Bee, 1998; Wills, 1994; IPD, 1995; Bramley, 1996) have argued that the traditional framework is too 'static' and 'mechanistic'. Their literatures suggest that each phase of the traditional training cycle needs to expand by including additional inter-related sub-phases to describe the activities that take place within each process in more detail. However, there were differing views on the number of stages that should make up the training cycle, with some suggesting more while some others suggesting otherwise. This contradictory view can blur the demarcation line separating the stages of the training cycle.

Analysing these differing views, it was acknowledged that a more detailed breakdown of the stages has its advantage in providing a better outline of the activities that takes place within each stage of the training process. However for the purpose of this research, this literature agrees with Anderson (1994) and Wilson (1999) that the traditional/classical training is a simple framework from which the whole training process can be easily conceptualised. As it provide a useful starting point to understand the training process, this approach is adopted as a basis to discuss the training processes in this research.

i. Training Needs and Training Needs Analysis (TNA)

Training 'Gap'

Anderson (1994), Bentley (1991), IES (1995), Reid and Barrington (1999) are in agreement in recognising TNA is the diagnostic part of the whole process training process and without TNAs, there can be no solid prognosis to indicate if the whole training process is designed correctly.

'Gaps' in the human performance as the consequence of change was highlighted in the discussions in Chapter 2. Within the training context, this gap relates to the term 'training need' which implies that something is lacking or there is there is a shortfall somewhere and training needs analysis (TNA) is the endeavour to reduce the gap by simply finding out what needs to be learnt. While there was a general agreement on the definition of 'training gap', there were varying terms used in literatures on training to define 'performance'. Mathews (1996), Hernes (1988) and Bentley (1991) relate training needs to 'skill and knowledge gaps', Bee and Bee (1998) and Osborne (1996) maintains it as 'performance gap' while Nolan (in Watkins *et al*, 1996) identifies it as 'competency gap'.

The research does not consider any contradiction of these terms when applied within the context of training needs. As performance, skills and competency as all originating from learning, it is obvious that the definition of training needs should be all-encompassing to include skills, knowledge, competency and/or performance needs.

TNA processes

Bee and Bee (1998), Wills (1994), IPD (1995) and Anderson (1994) commonly support the view that TNA encompasses the process of: (i) identifying the range and extent of training needs from business needs; (ii) specifying the needs precisely, and; (iii) analysing how best training needs might be met.

Bramley (1996) and Truelove (2001) maintain that to be holistic TNA should be carried out at the organistional level, at the job-level and the person level in organisations. Reid and Barrington (1999) lists observation, self-observation, questionnaire and fact-finding

interview as the common methods for carrying out TNAs. Alternatively, Fletcher (1997) list desk research, Delphi technique (which is useful for use with large population), self-assessment as methods and meetings/workshops/interviews as possible methods for carrying out TNA.

What and who should be involved?

Both Reid and Barrington (1999) and Fletcher (1997) agree that line managers, training consultants, trainees or trainers may carry out TNA's. Fletcher (1997) suggest that in competence-based training, it is often the manager ideally through discussions with the trainees concerned who will identify the training needs.

Chiu *et al* (1999) in their research on TNA methods distinguish TNA into four broad classifications of:

(i) supply-led approach

(ii) demand–led approach

(iii) process-led approach, and

(iv) trainee-centred approach

They note that each has their own weakness. They argued that the 'supply-led' approach which is usually trainer-driven can be inaccurate as trainers responsible for TNA could lack management experience and do not understand real operational issues. The 'demand–led' approach is business orientated and usually emphasise on bottom-line which often leads to neglect of employees needs. The 'process-led' approach is too localised for divisions or departments so that that processes can be introduced in an effective manner. The 'trainee-centred' approach, which relies on self-assessment, has drawn strong criticism as that reflect employee wants instead of needs. They believe

that TNA should be a more integrated process that should be repeated and subsequent experience learned could assist to prevent fragmented TNA process.

ii. Training Design

The design stage of the training process follows from the TNA stage and leads to the implementation stage. Johnson (1997) emphasise that it is very important that training methods, which are drawn from the design to match training needs. Reid and Barrington (1999) conceives training design as the stage of determining appropriate training strategy and planning. They identified five stages to the design of a structured training programme, they are: (i) review of training objectives; (ii) determine learning activities; (iii) assess training times; (iv) construct the training time-table; and (v) briefing the trainers and the organisation, and preparation of training materials.

Rae (1995) identifies that the key parties that must be involved in making training effective are the organistion, the line management, the training manager, the training officer and the trainee. Osborne (1996) maintains that training 'interventions' must match the organistional culture, management style and motivation. Adamson and Caple (1996) maintain that training, which they term as learning, requires the application of well-developed procedures in the hands of personnel who are able to apply a variety of competences in flexible ways to mesh with the organisation's operational considerations.

Johnson (1997) and Bentley (1991) affirm that there are many methods of conducting training and the training spectrum may varying from highly directive to free learning, guided learning, lecture/discussion, presentation, instruction and conditioning for individuals or as a group. Thomson (1990) suggests that formal training entails

deliberate and structured presentation of experiences and must be related to its purpose. He identifies this purpose as varying from induction, skill acquisition, skill development, increasing motivation, attitude change and team building.

Wills (1994) reminds the importance of getting the training function's house together before implementing training. He suggest that getting the training function 'alignment' correct; the appointment of the right parties to the training forum; a clearly outlined training department mission; and the right training philosophy which would translate to the establishment of training policies and standards, are key elements of training design and development.

Anderson (1994) is of the opinion that the key elements of the design of training programmes are the subject matter, its objective and content, and the method or technique; and these factors which must be related the learner, the learning characteristics, the line and staff members, the learning environment and the resources available. Reid and Barrington (1999) suggest that the 'decision criteria' to determine the appropriate training strategy should be based on compatibility with objectives, estimated likelihood of transfer of learning to the work situation, available resources and trainee related factors. They classified six possible training strategies, which are:

(i) on-the-job;

(ii) planned organisational experience;

(iii) in-house programmes;

(iv) planned experience outside the organistion;

(v) external courses; and

(vi) self-managed learning.

Mathews *et al* (2001) from their research however found that no single approach dominate training and suggesting different types of training for different types of people in the organisation. Bee and Bee (1995) suggest that the stage when the training specification is complete usually signifies the final stages of the design and development stage.

Supporters of competency-based training Johnson (1997) and Fletcher (1997) identifies that in contrast to traditional training, the design of competence-based trainings are based on explicit and measurable performance that reflect the actual expectations and performance in the work role. Fletcher (1997) outlines that the purpose of competence-based training is to develop of a competent workforce to reflect the expectations of the employment and focuses on work roles rather than jobs. Klink and Streumer (2002) suggest that on-the-job training provides a favourable relationship between cost and benefit, the possibility to train just-in-time and expectation of positive transfer of what was learned to the employee's own work situation.

iii. Training Implementation

Training implementation is putting the design into practice and there is a wide range of training options available in the implementation of training. Anderson (1994) suggests that the training policy and the training plan must be the key reference for implementing training. Bee and Bee (1995) and Anderson (1994) suggest that the implementation of the training may be carried out through external or internal providers. Anderson (1994) suggests the choice to be based on cost effectiveness. Bee and Bee (1995) suggest external training providers to be sourced by tendering.

Rae (1995) notes that approach to training now has shifted for the 'traditional approach' that was mechanistic and autocratic to the modern approach that emphasise on

flexibility, reactivity and pro-activity in its implementation. This has seen the change from the 'tell' em' approach to more of the role of coaching and facilitating. He adds that the trainer must be committed and equipped with wide-ranging toolkit of ideas, techniques, and methods. Geertshuit *et al* (2002) suggest that the trainer and course content are crucial to many learning situations including training.

Abella (1987) identifies task-force exercise, case discussion, simulation and games, role-play exercise, group discussion, individual exercise, presentation/lectures and behaviour modelling are the common methodology used in training. Mathews (1996) notes that that training can be generally classified as on-the–job and off-the-job training, but each has their disadvantages. Rae (1992) considers on-the-job training as highly effective, flexible, relatively low-cost approach to training. Matthews (1996) state that it was often argued that off-the-job only training might be ineffective as it is too detached from the actual job-environment. However, he adds that on-the-job training, which is are usually designed for skill training can be a problem if it does not follow guidelines of standard training programmes.

Adamson and Caple (1996) asserts that the delivery of training or learning needs to be clearly focused on what happens at the job place and not just what happens during the learning/training events. They suggest the use of a variety of on and off-the-job learning/training delivery system to ensure effective and efficient learning. Fletcher (1997) identifies that competence-based training are often modular outlines and suggest that the best approach must take into account occupational constraints such as availability of target groups and training premises, possible need for several programmes and atmosphere at the job location. He adds that the activity must be

realistic, for example if the context of the work suggests on-the-job or off-the-job experience and the preferred learning styles of the target group.

iv. Training Evaluation

The literature investigations identified the definition of evaluation as; "*....the assessment of the total value of a training system, training course or programme in social as well as financial terms...*' and "*...it attempts to measure the overall cost benefit of the course or programme and not just the achievement of its laid down objectives*" proposed by Department of Employment the most widely adopted definition in most of the literatures researched (Bee and Bee, 1998; Anderson, 1994; Johnson, 1997; Bramley, 1996).

Goldstein (1989), Wade (1995) and Johnson (1997) consider training evaluation as a systematic collection of data relevant to the selection, adoption or modification of training and developmental activities. It must be an on-going process from which continuous corrective action can be introduced to ensure an ever-improving training programme. Torrington and Hall (1991) maintain that it is imperative that evaluations must be impartial. Wade (1995) adds that that evaluation should be done before training starts. A baseline data must be established to measure training programme response, on-the-job action, business-focus results and the organisational impact of the training. Read and Kleiner (1996) emphasise the importance of post-training evaluation and suggest that the training itself would be wasted if employees cannot transfer what they have learned.

Rae (in Odini, 2000) asserts that without evaluation nobody really knows how effective any form of training might be. They suggest that the training quintet, which comprise

of the senior managers, line managers, training manager, trainer and learner must be involved. Conversely, Torrington and Hall (1991) considers the manager, relevant line managers and the trainees and/or an external consultant as the key parties to the training evaluation. Mann (1996) argues that neither reaction to training nor immediate post-training knowledge is accurate predictors of actual performance. He suggests assessing change of performance a month after the training programme would be more accurate. Klink and Streumer (2002) found that on-the-job training is not entirely an effective training method and suggest that self-efficiency (an established indicator of actual performance), prior experience with tasks, managerial support and workloads are among the most powerful predictors of training effectiveness.

There has been some contention as to the extent of the training evaluation. This was illustrated by Bramley (1996) from his study on four popular training evaluation models developed by Kirkpatrick, Warr, Bird and Rackham, and Hamblin. This is shown in Table 3.5.1.1.

IPD (1998), Reid and Barrington (1999), Bramley and Kitson (1994) believe that the training evaluation model suggested by Kirkpatrick (without evaluation on social or cultural changes) is the most appropriate on the justification that on the basis that it is already adequate up to this level. Conversely, Bramley (1996) and Osborne (1996) argue that the model proposed by Hamblin was better on the grounds that it is the more holistic. Torrington and Hall (1991) considers that evaluation as straightforward when the output of training is clear to see but it is usually difficult to evaluate social skill development training programmes.

Areas	Components	Kirkpatrick, D. (1959)	Warr,P.B., Bird M.W. & Rackham N.R (1970)	Hamblin, A.C (1974)
Within the training	• Judgments of the quality of the trainees' experiences • Feedback to trainees' about learning	Reaction	Reaction	Reaction
At the job after training	• Measures of gain or change • Feedback to trainers about methods • Relevance of the learning goals • Measures of use of learning or change of behaviour • Retrospective feedback to trainers	Learning Behaviour	Intermediate Intermediate	Learning Job behaviour
Organisational effectiveness	• Measures of change in organizational performance • Implementation of individual/action plans or projects	Results	Ultimate	Organisation
Social or cultural values	• Measures of social cost and benefits • Human resources accounting	–	–	Ultimate Ultimate

Table 3.5.1.1: Levels at which evaluation objectives can be set (Adapted from Bramley, 1996)

Fletcher (1997) contends that assessment for competence-based training should be built into its design to ensure that what is being assessed is clear. He suggests that this entails trainees to complete assignments which indicate the acquisition of skills and knowledge. He adds that they may also undertake assignments during the programme, which indicate the application of skills and knowledge. He offers his conception of the cycle for evaluation and assessment as shown in Figure 3.5.1.2.

The research identified the definition of effectiveness offered by Kast and Rosenzweig (1985) that *effectiveness as concerned with the accomplishment of explicit and implicit goals,* to be in accord with the definitions of training effectiveness in the literatures by Anderson (1994), IES (1995), Truelove (2002), Fletcher (1997), Wade (1995), Rae (1995), Bee and Bee (1998), Jackson (1992) and Osborne (1996). It was noted that in their conceptualisation of the relationship between training evaluation and training

effectiveness, there is a general acknowledgement that effectiveness is the sub-set of evaluation and training effectiveness is the desired outcome of the training evaluation.

While there was also a general agreement that the explicit and implicit goals of training should be laid down in the cost and benefits analysis of the training programme, the criteria for determining the extent of indirect and social cost or benefit is be very subjective and is a subject of much debate. This is seen to have evolved around the central question of what constitutes to training effectiveness.

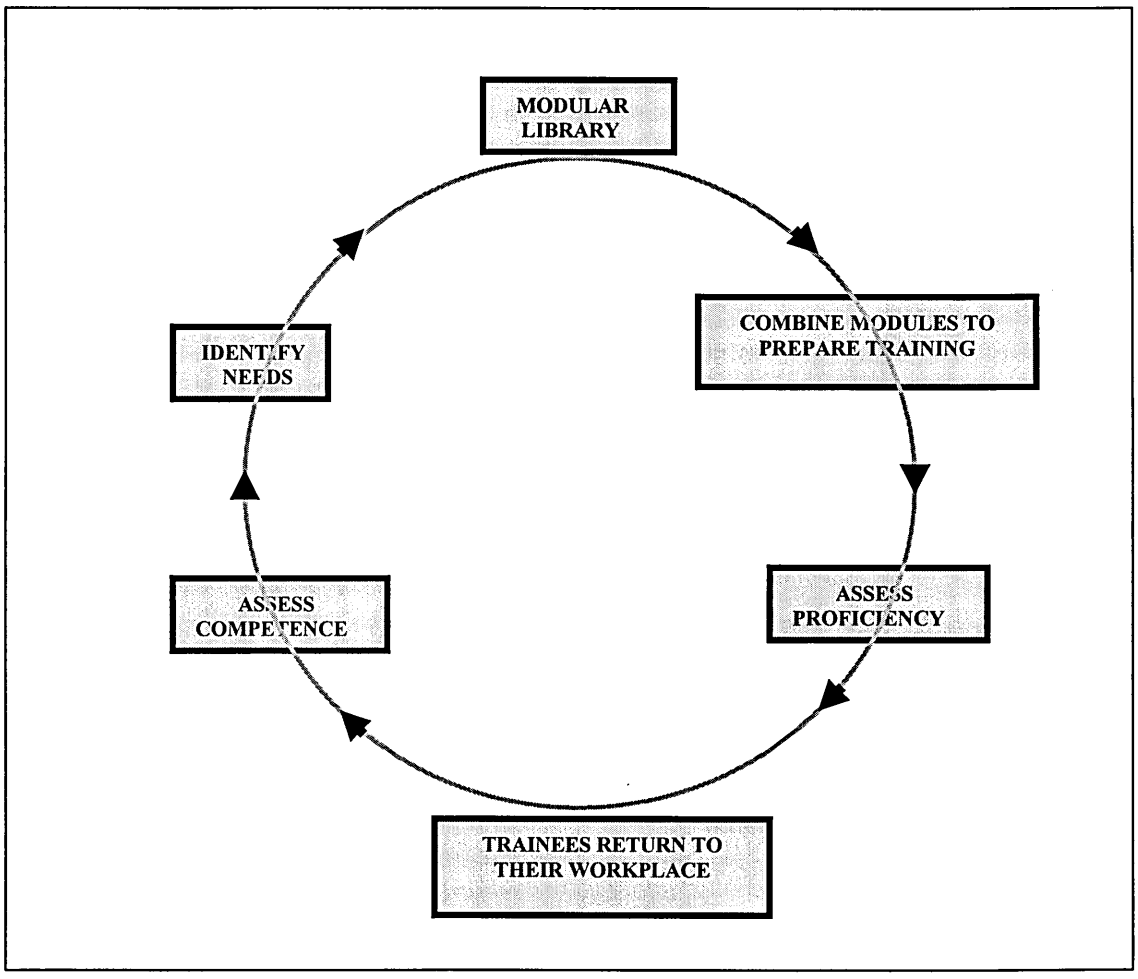

Fig. 3.5.1.2: 'Building-in' training assessment model (Fletcher, 1997)

Notwithstanding the differing views on the extent and significance to which the evaluation should be carried out, there is a general agreement that training effectiveness must be evaluated based from both personal and organisational outcomes (Osborne,

1996; Bramley, 1996; Bee and Bee, 1998; Rae, 1995; Truelove, 2001; Anderson, 1994). Further examination of the views taken by the literatures found that it was obvious that the differences lies in the context of their discussions, that is, whether training was perceived from the learning, organisational, personal or development perspective.

It was concluded that training effectiveness is a value judgment which is contingent upon the context of training, the baseline criteria set as the explicit and implicit training goals and the accomplishment of these goals. This is parallel to the views of Anderson (1994) and Wade (1995) who suggest that the criteria and the degree that is reasonable and worthwhile to measure the impact of what should be evaluated goes back to the core of evaluation, its purpose. The professional way to determine training effectiveness is to validate training holistically by taking into account outcomes from both the organisation and the individual.

3.5.2 Conceptual framework of training best practice drawn for the research

Drawing from the discussion in Chapter Two and Three, training was regarded is absolutely essential for the site managers, construction organisations and the industry, and this must be achieved within the context of the organisational setting and its surrounding project environment. Training lies at the core of creating, maintaining and developing site managers, who contribute in-part, to the achievement of construction projects. Much of the site managers training need to be designed at the workplace environment where their effectiveness is judged by their capability to deliver and contribute to the success of the construction project.

In consideration of the need to approach this research with an established and operational framework, the best practice training framework discussed within this

chapter was considered. This was on the conviction that it is most appropriate in dealing with change that is impacting the construction industry and sustaining the provisions for training its site managers. This was further underpinned by the thorough investigations of the key concepts of training and within the context of best practice, change, human resource development, management and organisations, which incidentally are also the key features of the construction industry. The absence of other proven approaches further augments this proposition.

The approach adopted by Spencer *et al* (2003) to develop the framework in their research project was modelled to structure the conceptual training best practice framework for the research. The key elements of the framework, which is diagrammatically summarised in Figure 3.5.2.1, are:

- training needs to be conceived as a dynamic cyclic process;
- the importance of common comprehension of the purpose of the training especially between the key parties related to the training;
- effective training can be identified through the benefits derived by the trainee, their employer and the job;
- training is a dynamic cyclic process and the approaches within each training element are continually evolving;
- each stage of the training process is inter-related and the outcome from the evaluation stage must be considered in the next TNA stage of the training cycle;
- each training stage is comprised of sub-elements and these sub-elements must be approached systematically if the usefulness of the training initiative is to be maintained;
- continuous learning of the factors that shape each training element is key to the whole training process;

- the key information that needs to be identified in considering the approach to each training stage are: (i) the objectives of each of the training activity, (ii) the underpinning factors of each of the training element (iii) the alternatives and the best approach to carry out the process, and (iv) how the training process could be best managed;
- base-line data are important to establishment 'performance indicators' to measure performance within each training element;
- best practice must be applied within the context of the organisation/industry and no one training approach is dominant; and
- although evaluation of the training effectiveness can be relative, the holistic evaluation based on its outcome to the organisation and the individual is recommended.

3.6 CHAPTER SUMMARY

This Chapter have provided a comprehensive understanding of training and training best practice for the research and the conceptualisation of the themes discussed was summarised in Figure 3.5.2.2. The underpinning concepts of training and training best practice have been thoroughly reviewed. The key elements of training best practice have been identified and this will be adopted in the investigations on the training of construction site managers for this research.

The next chapter continues to provide the background and discussions for understanding more fully the opportunities and the validity of the current approach adopted by the construction industry in training site managers.

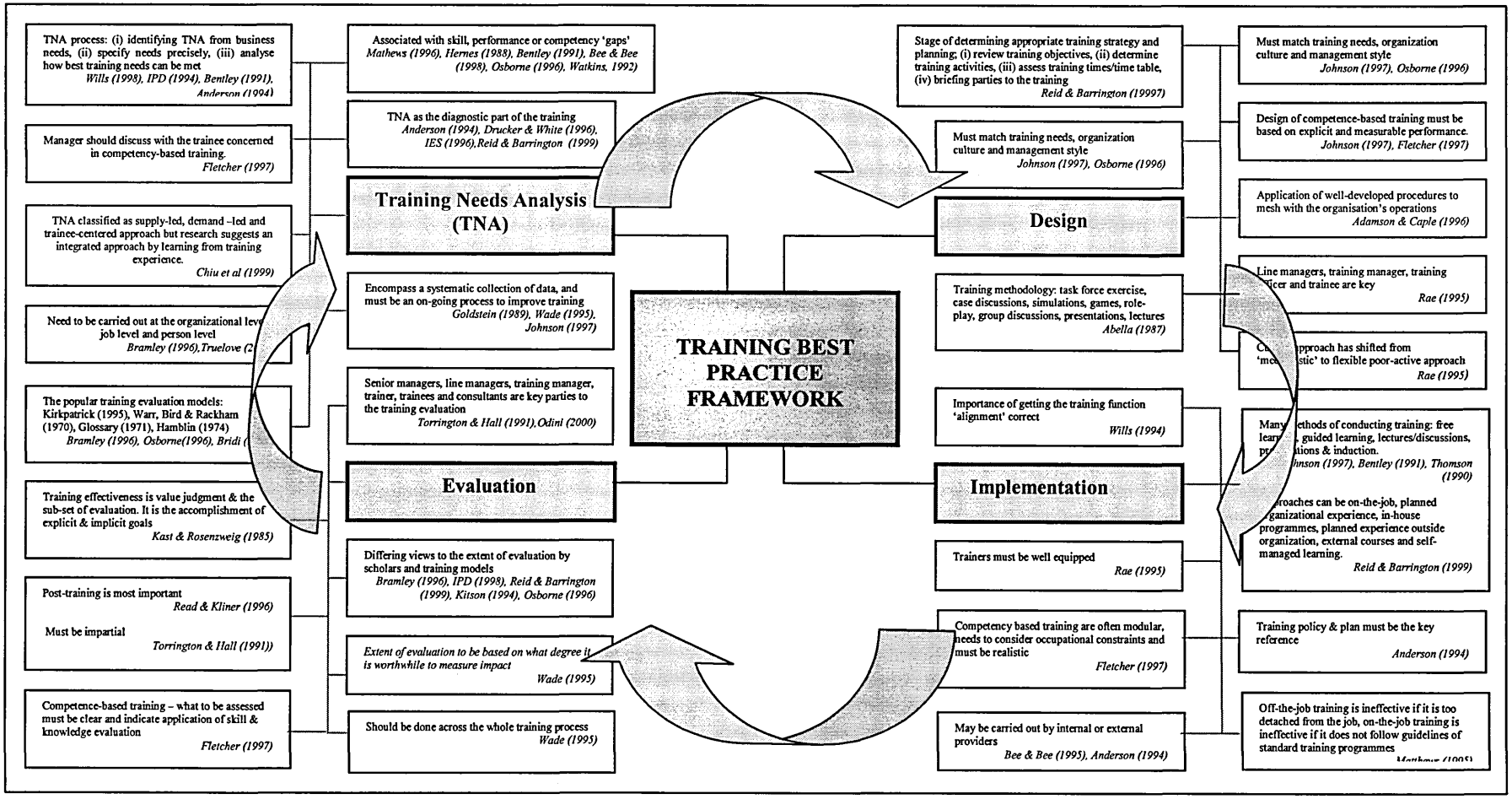

Fig. 3.5.2.1: Theoretical framework of Training Best Practice

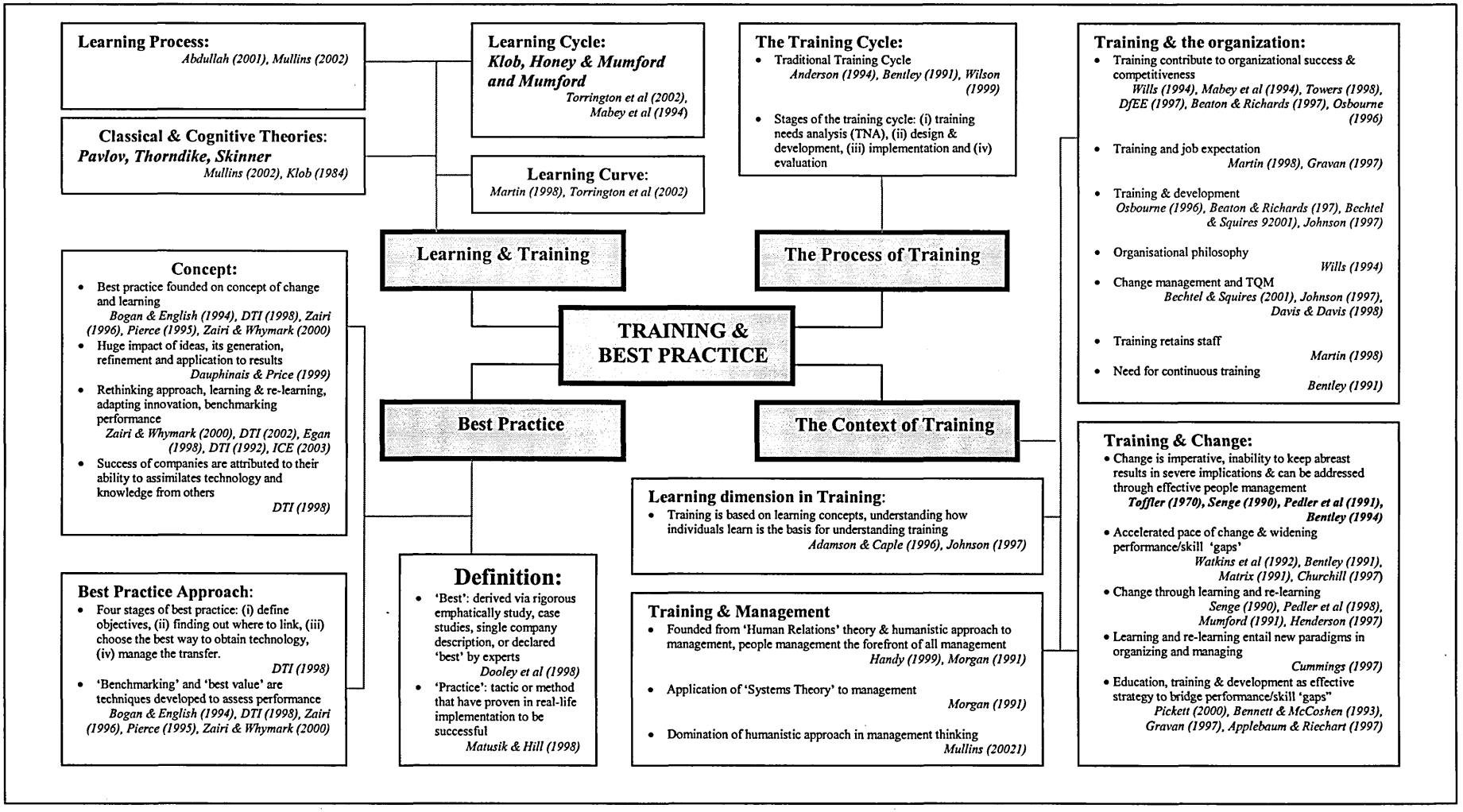

Fig. 3.5.2.2: Literature review themes on training & best practice

CHAPTER FOUR
Provisions for Training Site Managers

4.1 INTRODUCTION

The important concepts of training and training best practice were discussed in Chapter Three. It underlined the phenomenon of the rapidly changing business environment, the recognition of best practice for change management and proposed the best practice training framework for the research.

This chapter presents the background and the analysis of the current training provisions offered for site management training within the construction industry which relates to the training of site managers. It provides key in-sights to the current training provisions, which influence the design, delivery and outcomes of site management training. The existing frameworks for the education and training of site managers offered by the academic, vocational and professional structures were examined, and the roles of the various parties related the education and training of site managers were critically discussed.

The emerging findings together with views taken from reports and parties related to the construction industry were used to determine the validity and opportunities of the current provisions in meeting the training needs of site managers. Many of the references cited in this chapter are extracts from articles obtained from professional publications and magazines by experts and authors in the field of construction. Relevant parts of official reports prepared for the construction industry and work arising there from are also cited. Training provisions provided in-house by construction organisations and those offered by private companies which are not related to the site

management training offered at the industry level are not included in the discussions as they are too specific to the organisational needs and do not contribute or form part of the training network applicable to the whole industry.

The chapter concludes by presenting the merits of the current training provisions in meeting the training needs of site managers and presents the justification why more research is needed to investigate and improve the existing training of site managers. The findings from the literature were taken to be the key determinant of the research questions of the research reaffirmed in Chapter Five.

4.2 THE CURRENT SITE MANAGEMENT TRAINING PROVISIONS

Before progressing to examine and discuss the provisions for site management training, it is essential to explain the various reports related to site management education and training produced for the construction industry; the existing structures for education and training; and the Construction Skills Certification Scheme (CSCS) as a frame of reference for the discussions.

4.2.1 Reports produced for the construction industry

Several reports were produced for the construction industry which has contributed to shape the provisions for the site management education and training. The key elements of these reports are summarised in Table 4.2.1.1 and are discussed as follows:

Morley Report (1986)

The Morley Report (1986), headed by Mr. C. P. Morley, was produced following the recommendations of the Joint Committee on Management Development organised by

the Construction Industry Training Officers Conference (CITOC). It investigated management training within the construction industry and published the report entitled *'Construction Supervision and Management'* which outlines the routes and possible points of entry into the industry and career progression in site management. This is shown in Figure 4.2.1.1.

One of the most important elements of the report was its reminder of the conclusion of the CITOC that supervision and management training is not a luxury nor a fringe benefit, but a commercial necessity. This was followed by the debate calling for education and training for managers within the construction industry to be improved, and the production of key follow up reports. It acknowledge that the building sector is more advanced than other sectors because of the CIOB's Site Management and Education Training Scheme or SMETS, but pointed out that they are not fully utilised.

Lighthill Report (1986)

This report was produced by the Joint Committee on Higher Education under the leadership of Sir James Lighthill entitled *'Degrees in Building Management: Demand, Provision and Promotion'*. Better known as the *'Lighthill Report'*, it investigated the demand for building graduates and the need to improve recruitment for careers in building management.

Amongst others, it reported that the industry was changing from a tradition of craft skills to a modern technological base, and warns of the need for the education and training of future building managers to change if the industry's requirements for the 1990's and beyond are to be met.

MORLEY REPORT (1985) Joint Committee on Management Development (JCMD)	**LIGHTHILL REPORT (1986)** Joint Committee on Higher Education in Building (JCHEB)	**AD HOC WORKING GROUP REPORT (AHWG, 1988)** Management Development (AHWCGMD)	**CIOB EDUCATION STRATEGY REPORT (1988)** Chartered Institute of Building (CIOB)	**CROSSING BOUNDARIES: COMMONALITY (1992)** National Economic Development Council (NEDC)	**EDUCATING THE PROFESSIONAL TEAM (1994)** Construction Industry Board (CIB)
Aims: *"To investigate management training in the construction industry"*	Aims: *"To assess future demand for Building Graduates and improving recruitment to career in building management"*	Aims: *"To establish management Development Policy For the Construction Industry"*	Aim: *"To re-define the Institute's future education strategy with a view to increase influence in education matters and strengthening the building discipline"*	Aims: "To *establish the scope for greater commonality in the education of construction professionals"*	*Aims:* *"To implement specific recommendations from the 'Latham Report"*
Findings: • Training courses for people in site management already exist but not fully utilised (in reference to SMETS)	Findings: • Construction industry in the process of changing	Findings: • No established route into management for management qualifications and no framework for management development	Recommendations: • Educate and train Chartered Builders to manage the whole building process • Support the production of building managers irrespective of the education route • Actively participate in the CITB's Management Careers Services • Continue the programme to promote the Chartered Builder • Co-operate positively to produce NVQ's	Findings: • Clients are unhappy about the traditional form of contract • The traditional contract is still seen as the most suitable for clients • The traditional form of contract suffers from sharp distinction between the parties to the project • Without good management, this will lead to adversarial relationships and resultant decline in quality of work • Managers coming from the craft background is declining	Findings: • National education system for construction professionals remains largely unchanged • The learning outcomes have parallels in vocational competencies
Recommendations: • Develop a course framework that could be adapted, using modular training system to all sectors of the industry • Framework should reflect changing technology, structure and shape of the industry • The introduction of credit accumulation process leading to recognised vocational qualifications, but wherever possible to existing qualifications • Supervisory and management training is not a luxury, nor a fringe benefit but a commercial necessity.	Recommendations: • Large unsatisfied demand for building graduates • Lack of knowledge regarding building management and its career opportunity especially among school leavers • Need for a Building Management Career Service	Recommendations: • Series of development education/training modules have to be established • Each module to be offered for assessment by the National Council for Vocational Qualifications (NCVQ)			Recommendations: • A common foundation knowledge and understanding about the professionals, changing roles and tasks, team working, team-player skills and group dynamics • This should be viewed as a threshold requirement for all construction professionals

Table 4.2.1.1: Key elements of reports produced for the construction industry relating to site management training and education

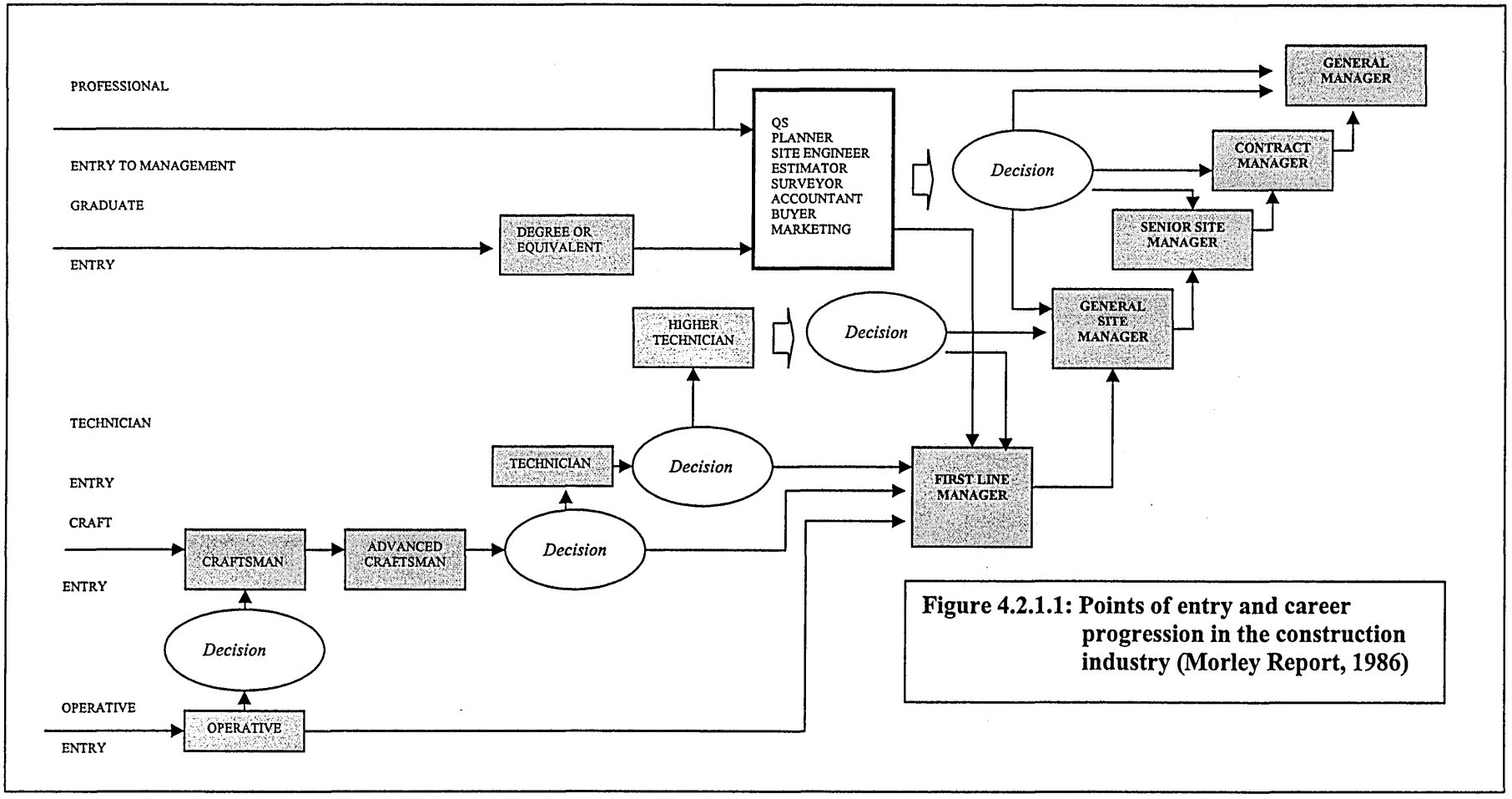

Figure 4.2.1.1: Points of entry and career progression in the construction industry (Morley Report, 1986)

It points out that there was a large unsatisfied demand for building graduates within the industry and the lack of knowledge regarding building management or its career opportunities particularly amongst qualified school leavers.

It concluded with the recommendation for a 'Building Management Careers Service' to attract more candidates into building management courses.

CITB's Ad-Hoc Working Group Report (1988)

Following the Morley Report, the CITB's Ad-Hoc Working Group on Management Development produced this report which identifies that there was no framework for management development.

It highlights that the construction industry does not have an easily understandable career structure with easily recognisable and accepted titles. It also underlined the need to establish career routes into management for construction related management qualifications. It proposed a series of development training and education modules would have to be established. These would be undertaken in-house by companies, at training establishments or in educational work-related settings and each module offered assessment by the NVQ.

CIOB Education Strategy Working Party Report (1988)

In response to the issues raised in the Morley and Lighthill reports, the CIOB Education Strategy Working Party Report produced the 'Building Education for Tomorrow Report'.

It underlines the review of the Institute's training, education and examination provisions which have been incorporated in the CIOB's 1994 Education Framework. Burgess (1999) reports that the major elements of the provisions which provides detailed requirements of the content of degree courses in building and building management is still in application.

CIC's 'Crossing the Boundaries: Commonality Report (1993)

The '*Crossing the Boundaries: A Report on the State of Commonality in Education and Training for the Construction Professionals*' produced by the Construction Industry Council (CIC) in 1993 provides recommendations on professional education and training as a key contributor to construction efficiency and customer satisfaction.

It recommends that all professional institutions should work together to improve co-operation through shared-activities that will facilitate integration between its members to improve efficiency and effectiveness. It suggests a multi-disciplinary approach for the built and natural environment professionals through co-ordinated professional education and co-ordinated Continuing Professional Development (CPD), and a common year at the university to cover topics of general concern in construction such as design, commercial, contractual, legal and project management issues.

CIB's Educating the Professional Team Report (1996)

Responding to the CIC Report (1993) and in detecting the growing importance of occupational standards, the CIB's '*Educating the Professional Team Report*" (1996) suggests that a common 'foundation' knowledge and understanding about the professions, changing roles and tasks, team working, team-player skills and group dynamics are necessary for all professionals in construction. It suggests that this

should be viewed as a threshold for all construction professionals and these learning outcomes have parallels in vocational competencies.

4.2.2 Construction Skills Certification Scheme (CSCS)

The initiative to overcome the problems of poor training and to develop an integrated training culture within the industry was introduced through the Construction Skills Certification Scheme (CSCS). Mooted by the CITB and the Learning and Skills Council (LSC) in agreement with the Major Contractors Group (MCG), the CSCS was piloted in July 2002 and have been included in the JCT Standard Form of Building Contract. The scheme, which covers 165 occupations, aims to ensure that all including professional, technical, supervisory and craft workers have sufficient skills and training to work on site.

Through the CSCS, a site worker will need to demonstrate their occupational capabilities (generally via an NVQ qualification) and pass the construction health and safety test. It was planned that when fully implemented, all workers will be required to carry a credit card sized identification, which shows the NVQ skill area in which they have qualified. This is aimed to allow employers to audit the skills possessed by their workers as well as serve as a tool to assist employers identify their workers critical training needs.

The LSC (2003) reports that the Major Contractors Group (MCG) which includes over 20 of the largest UK contractors, have declared that over 80% of their workers must have a CSCS approved card to work on site by the end of 2002 and everyone in their projects must have one by the end of 2003. The organisers were optimistic that this will be a major step forward to self-regulation of training within the industry when this

scheme was launched, and there has been surge of applicants for the CSCS card in 2003. However, there has been little evidence to confirm that this target has been achieved.

4.2.3 Academic, vocational and professional educational/training

Generally, education within the UK construction industry is designed to complement the national education and training framework, which aims to provide academic and development opportunities for the benefit of individuals and the industry. Likewise, the training provisions offered to people in site management are designed to promote opportunities for academic, vocational and continuing study for development throughout one's career life.

The Construction Industry Handbook 98 (CIH 98) produced by the Construction Careers Forum (CCF), outlines the alternative routes leading to a career in site management as;

- studying and qualify for the A-levels or a further education qualification and proceed to obtain a construction related degree for a university, or
- studying a construction-related subject full-time and then work as a technician in the construction industry, or
- working and training as a technician in a company and study part-time at a further education college.

Further education (FE) colleges and institutions of higher education (HE) such as universities primarily offer academic education, while industry-related bodies such as the Construction Industry Training Board (CITB) and the Chartered Institute of Building (CIOB) provide most of the training at the industry level. These provide not

only continuing professional development (CPD) and vocational qualifications but can lead to the attainment of professional qualifications. In addition, many construction companies through in-house structured programmes provide job-related training and CPD. These provisions are embraced within the three structures:

(i) Academic;

(ii) Vocational; and

(iii) Professional education/training.

i Academic structure

Academic structures within the UK construction sector relate to entrants achieving a standard of education to 'A' level or equivalent, recognised for entry to university. A wide range of construction-related programmes of study exists from higher technician Edexcel courses (formally known as Business and Technology Education Council (BTEC)) or through accredited honours degree courses leading to corporate membership of professional industry bodies.

The Edexcel awards framework established in association with industry, CITB and the construction professions has specific requirements for Higher National awards which provide a structured set of essential and optional study units together with common-skills assessment. Awards of Higher National Certificate (HNC) and Higher National Diploma (HND) are obtained by unit-based study with the specific award dependent upon numbers of units obtained.

The BTEC National Award, Certificate and Diploma in Construction are focused to introduce to learners the subject knowledge required for a range of technical and professional occupations within construction. It is intended for individuals who seek a

direct route into employment in construction industry or a progression route to BETEC Level 4 and Level 5 qualifications, or to underpin and complete an NVQ at Level 3 or 4.

In addition to Edexcel provision, construction students can enrol directly on degree courses related to their specific vocation. Full-time degree courses can span three or four years with the latter incorporating industrial training. Part-time courses are also available over five or six years. Programme structures are generally modular based with choice and flexibility and a combination of essential and optional study units focussed to develop knowledge, skills and interpersonal capabilities. Many universities have accreditation from industry professional bodies where their honours degree satisfies defined academic standards.

The integration of the Edexcel Qualifications Framework to the overall academic structure for the construction industry was noted by Harvey and Ashworth (1994) and is shown in Figure 4.2.3.1, and the summary of the Edexcel Qualifications in the National Qualifications Framework (NQF) (Edexcel, 2003) is shown in Table 4.2.3.1

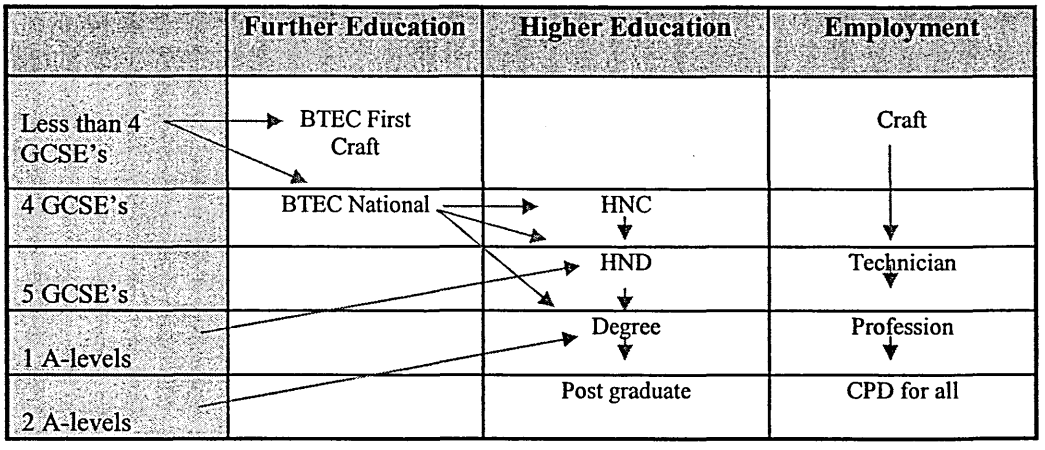

Figure 4.2.3.1: Ladder of education progression within the construction industry (Harvey & Ashworth, 1994)

NQF Level					
5	BTEC Professional Award, Certificate, Diploma		Key skills level 5		NVQ level 5
4	BTEC Higher National Diploma BTEC Higher National Certificate BTEC Professional Award, Certificate, Diploma		Key skills level 4		NVQ level 4
3	BTEC National Diploma BTEC National Certificate BTEC National Award BTEC Diploma in Foundation Studies (Art & Design) BTEC Award, Certificate, Diploma		Key skills level 3	GSC A Level GSC As Level VCE AEA	NVQ level 3
2	BTEC First Diploma BTEC Award, Certificate, Diploma	Level 2 Certificate in Adult Numeracy Level 2 Certificate in Adult Literacy	Key skills level 2	GCSE (A* - C) GCSE (Double Awards) (A* A* -CC) GCSC (Short Courses) (A* - C) Intermediate GNVQ	NVQ level 2
1	BTEC Introductory Certificate BTEC Introductory Diploma BTEC Award, Certificate, Diploma	Level 1 Certificate in Adult Numeracy Level 2 Certificate in Adult Literacy	Key skills level 1	GCSE (D – G) GCSE (Double Awards) (D – G) Foundation GNVQ	NVQ level 1
ENTRY	Entry Level Certificate in Skills for Working Life Entry Level Certificate in Personal Skills	Entry Level Certificate in Adult Numeracy Entry Level Certificate in Adult Numeracy		Entry Level Certificates	

Table 4.2.3.1: Edexcel Qualifications in the National Qualifications Framework (NQF) (Edexcel, 2003)

ii. Vocational structure

Alternative to the academic structure associated with university provision outlined previously, entrants to the construction industry may pursue vocational qualifications. National Vocational Qualifications (NVQs) and their Scottish counterparts (SVQs) represent a different approach to those of academic studies.

Vocational qualifications are awarded based on the individual's proven occupational competence and this is defined as the ability to perform to a specified standard of employment and practice.

The standards which were developed by the partnership between educators, professional bodies and industry are accredited by the National Council for Vocational Qualifications (NCVQs). The integrated structure illustrating the CITB's career progression routes, NCVQ's primary routes between NVQs in construction and built environment and the structure showing the progression route links between academic and vocational awards are shown in Figures 4.2.3.2, 4.2.3.3 and 4.2.3.4.

The vocational provisions are provided mostly by the CITB in partnership with FEs, which normally takes about two years to complete up to craft certificate level or the equivalent of NVQ (National Vocational Qualifications) Level 2 and is operated mainly within the On-Site Assessment and Training (OSAT) modes. A further year is normally required to advance to craft certificate level or the NVQ Level 3, followed by a mostly on-the job 'training' where the trainees have to demonstrate their competence in specific modules to qualify for NVQ Level 4 qualifications. The performance assessments are set against the NVQ qualifications standards and the awarding bodies are the City and Guilds of London Institute (CGLI) and the Construction Industry Training Board under

the umbrella of the National Council of Vocational Qualifications (NCVQ) and Edexcel.

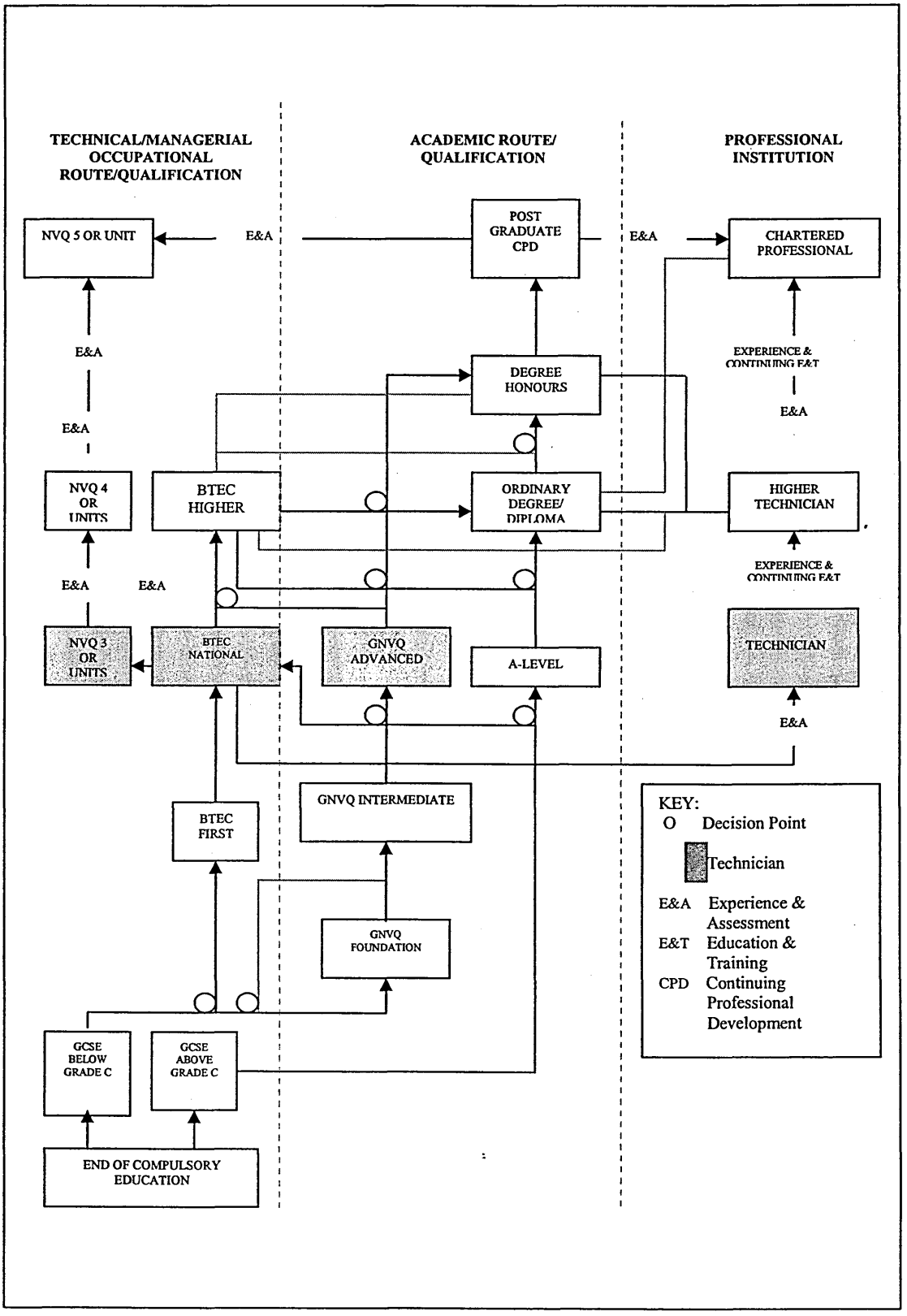

Figure 4.2.3.2: Progression map for Technicians (CITB's Joint Action Group on Technician Training (JAGOTT) Framework, 1996)

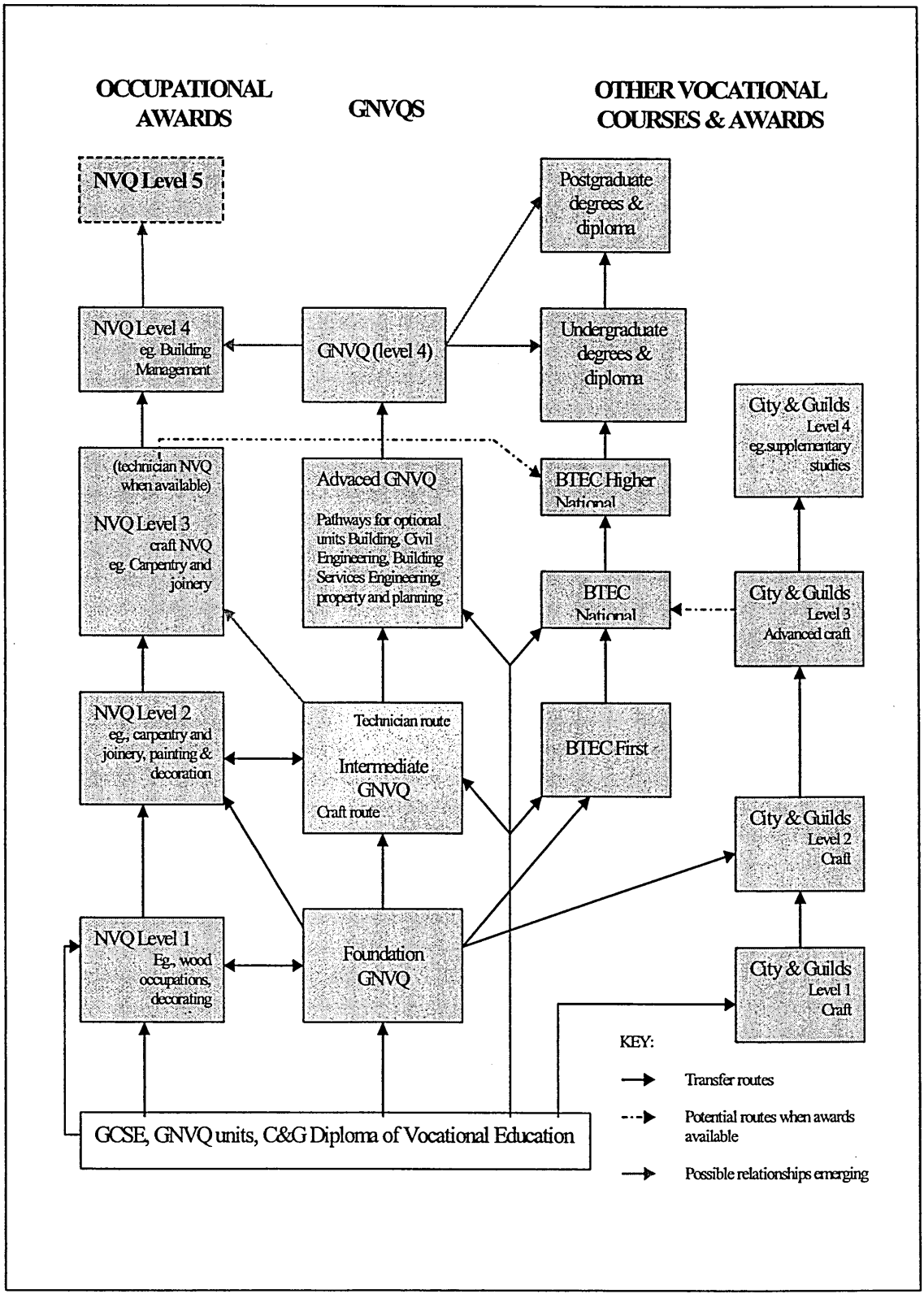

Figure 4.2.3.3: Primary routes between GNVQs in construction & built environment & other vocational awards (GNVQ Information Unit, 1994)

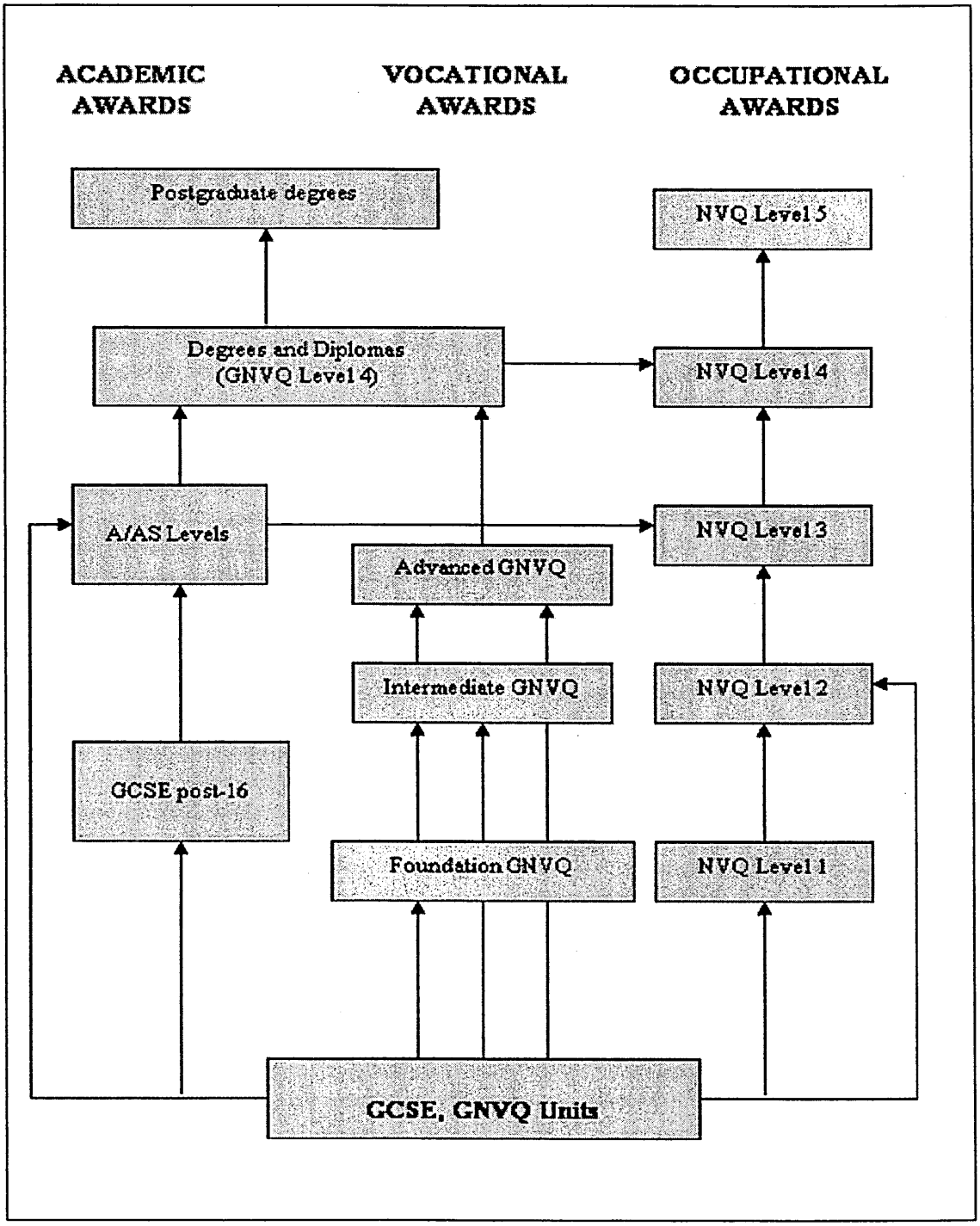

Figure 4.2.3.4: Framework of progression routes between academic & vocational awards (GNVQ Information Unit, 1994)

iii. Professional education and training structure

The principal route to professional education is the Chartered Institute of Building 'Education Framework'. This incorporates study in a range of technological and managerial subjects which may be undertaken at specific FE colleges or from the many providers of distance learning. The CIOB has its own examination structure for each framework level and in addition has a direct entry route for mature construction professionals. The diagrammatic illustration of the CIOB's New Education Framework and CIOB's Integrated Model for Educational and Professional Requirements are shown in Figures 4.2.3.5 and 4.2.3.6.

Training is also provided by the CIOB in addition to recognised training from CITB and many construction companies who provide in-house training. Such training spans a range from craft-based to management provision.

The CITB provides training for construction trades through its Foundation and Advanced Modern Apprenticeships in Construction, construction apprentice technicians through their Construction Operatives and Technicians (F/AMACOTT). Training for practicing site supervisors and site managers are offered through their Executive Programmes in Site Supervision and Site management at NVQ/SVQ level 3 and 4 qualifications. The CITB Modern Apprenticeship Framework is designed to provide career pathways for individuals to progress further into chosen occupation or transfer into technical, supervisory, management and professional career within the industry; or to progress through further and higher education (CITB, 2000b).

The NVQ/SVQ Site Supervision (SS) and Site Management (SM) training are run by CITB and approved training organisations/colleges, and some with through working

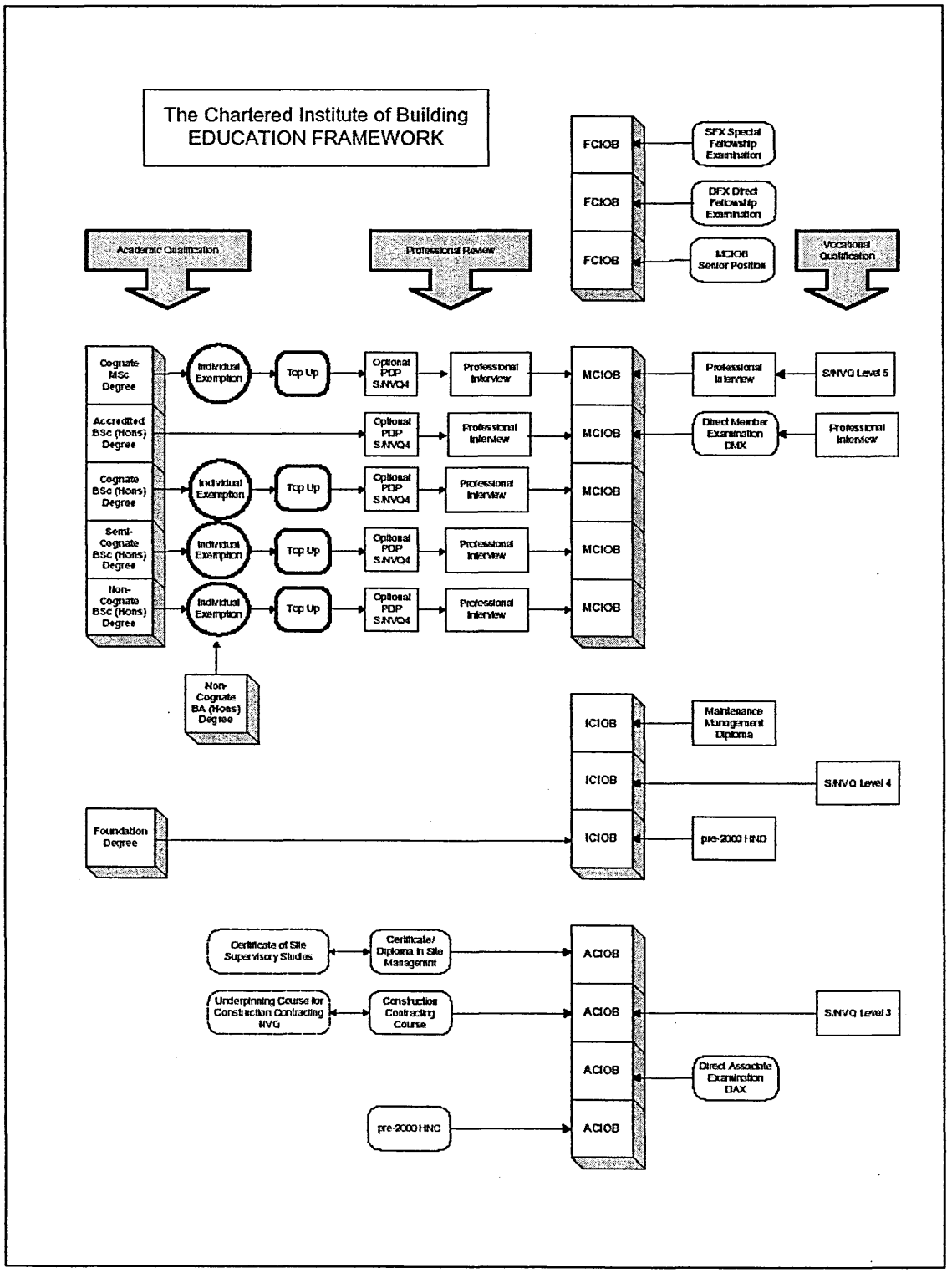

Figure 4.2.3.5: The new CIOB Education Framework (CIOB, 2003)

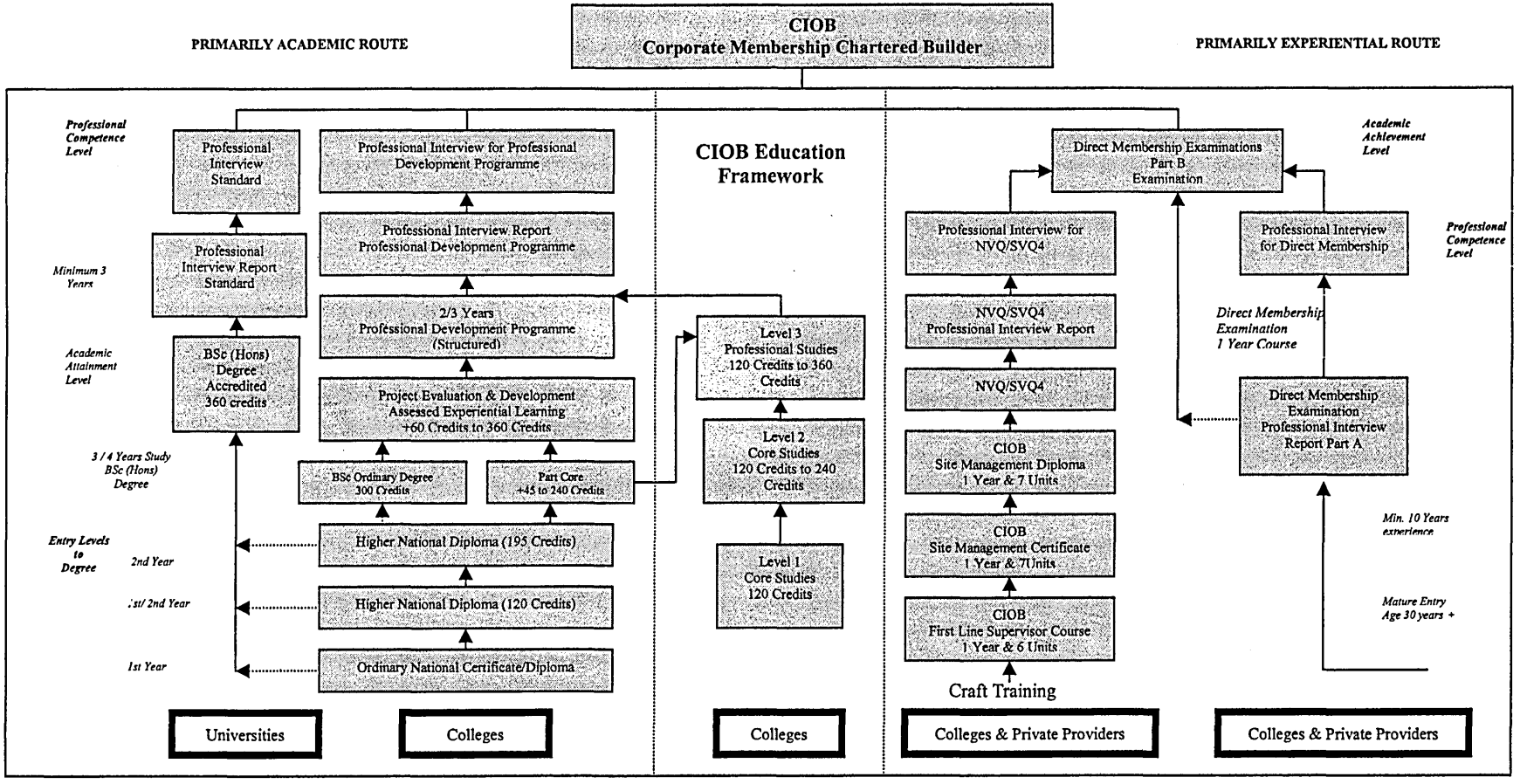

Figure 4.2.3.6: CIOB's integrated model of education & professional requirements (Stephenson & Williams, 2000)

arrangements with construction organisations. Their SS and SM consider their training largely through on-the-job 'self-learning' through work exposure and actually performing the set of tasks set out by the requirements of the NVQ/SVQ qualifications which does not require the trainees to attend regular classes or 'off-the-job' training.

In addition to the NVQ specified training modules, additional modules related to site management are also available through a combination of normally one day workshops and on-site assessment modes. The CIOB Site Management Education and Training Scheme or SMETS, which has been renamed the Certificate and Diploma in Site Management scheme (C/DSM), has been the pioneer formal site management training scheme within the industry.

Figure 4.2.3.7 shows the typical flowchart of the C/DSM training scheme commonly conducted by training providers. Being an established site management training scheme, significant data was found on the scheme (CIOB, 2002a; Arshad, 1997; Hassan, 1994; Brown, 1997; Hatchett *et al*, 1976; Walkerdine, 1982; Young and Egbu, 1992; Farrell, 1999; Burgess, 1999). Designed originally to train craft-based site managers to bridge the gap between craft-based training and site management, it provides a coherent route for individuals progressing from a trade background and first-line supervisory position to broader site management, usually but not exclusively in mid-career. The scheme which allows individuals to learn at his/her own pace was elevated to NVQ Level 4 qualification in 2004.

It provides foundation education/training with the attainment of Certificate in Site Supervision and Diploma Site Management qualifications. Being an established training scheme, significant data from the literature Hassan (1994), Brown (1997) and

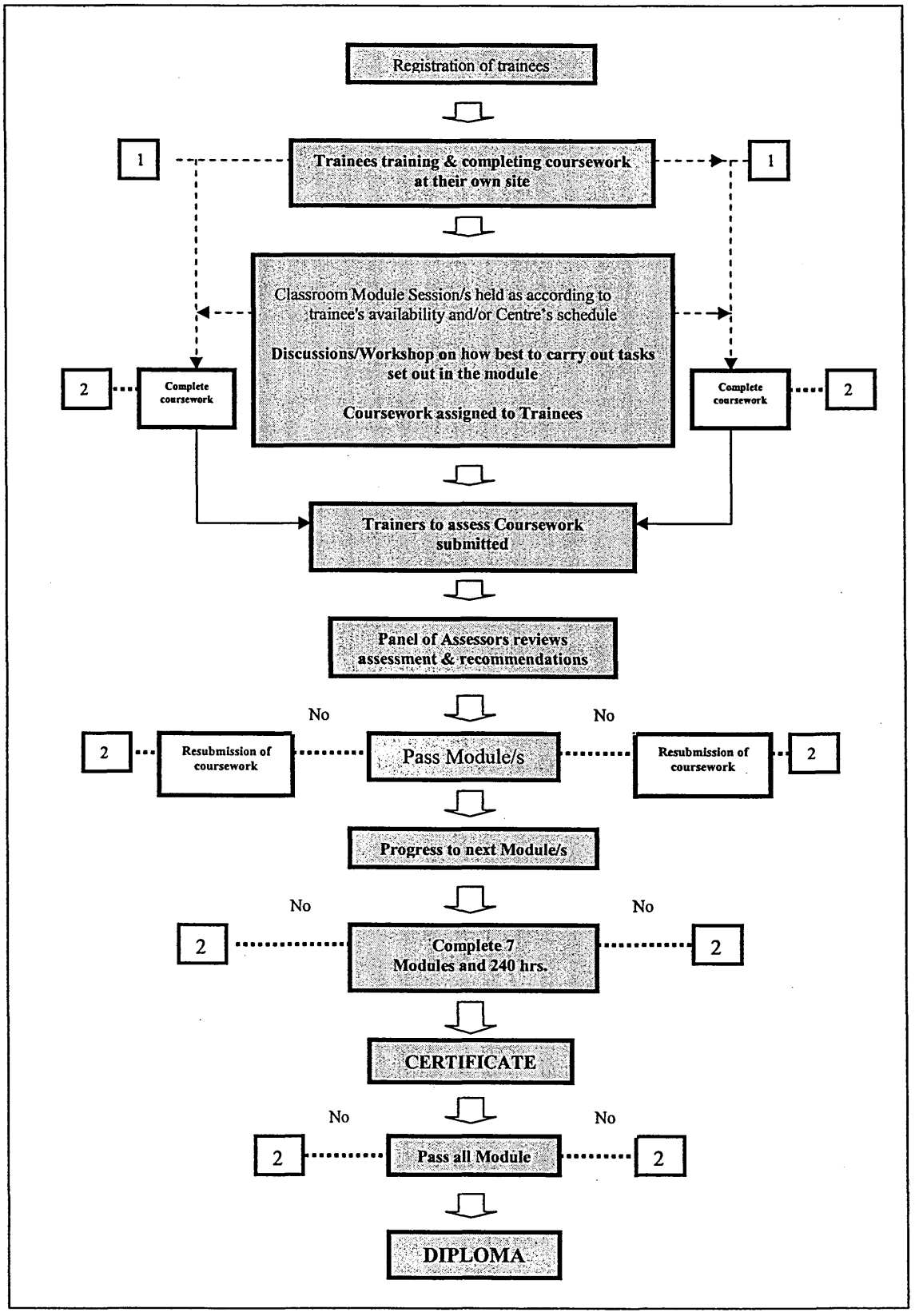

Figure 4.2.3.7: Flowchart of the typical CIOB C/DSM Scheme (CIOB 2002)

Arshad (1997) all suggest that the CIOB C/DSM scheme has been successful, chiefly due to its applicability, pace and flexibility.

4.3 VIEWS ON THE CURRENT TRAINING PROVISIONS

While many initiatives have been taken to improve training within the industry, the poor response to training has correspondingly affected site management training and the training of site managers. The research identified a range of issues which inter-relate and contribute to the problems of training site managers and these were summarised in Figure 4.3 at the end of the discussions.

4.3.1 Trends within the industry

Although the Egan Report (1998) calls for better site management and better education and training for site managers to elevate their performance, research by Moors Rowland Management Solutions commissioned by the CITB (2000a) found that construction skills today would not be adequate for the future, compounding the problems of manpower reported in the state of the construction reports (DTI, 1999; DTI, 2000; DTI, 2003).

The steady decline in the number of applicants and acceptances for undergraduate construction courses which continue to affect the supply for the industry for the future is continuing. CRISP Consultancy Commission (CCC) University of Southampton (2001) and CITB (2000b) report the increasing problem of availability of suitably qualified and experienced professional staff across all disciplines in the construction industry.

The University and College Admissions Service or UCAS reports show that applications for building/construction degrees have dropped by 50% from 1999 to 2000 and continue to drop. In response to this Dainty and Edwards (2003) suggest the industry to embark on a collaborative, immediate and sustained promotional campaign if severe recruitment difficulties are to be avoided.

Whilst there was a reported increase in adults without employer sponsorship enrolling on construction and related courses, only a small percentage of workforce in the industry holds the National Vocational Qualifications or NVQ levels 4 and 5 (D*f*EE, 1997). Long lasting recruitment problems and new working practices were identified to be the most likely causes of skill gaps (LSC, 2003). Employers demand site-proven skills, some are reluctant to provide work experience for trainees (Agapiau *et at*, 1995; Mackenzie *et al*, 2000). Gann and Senker (1998) report that training needs have changed with the changes that have taken place in the industry and Harris (1991) warns of the dangerous construction industry culture where many people take the view that training is optional.

4.3.2 Career routes into site management

The Morley Report (1986) and the Ad Hoc Working Group Report 1988 by CITB (1988) pointed out that there are no established career route into management, too few construction related management qualifications and there was no framework for management development.

Farrell (1999) suggests that craft training alone is not acceptable as a lone route into site management and stress that training provided must cater for site managers who come from different backgrounds. Whilst Watkins *et al* (1996) report that professional

associations are beginning to create alternative routes to full membership, Burgess (1999) in his research argue that the route leading to the position of a site manager is still vague and imprecise.

4.3.3 The academic and vocational provisions

Burgess (1999) and CIOB (2003a) notes that there was considerable level of dissatisfaction with the academic and vocational provision provided to support training for site managers. CIOB (2003a) reports that employers do not rate construction graduates highly and Construction News (2004d) suggest that this was because they are not adequately equipped for their job.

Howarth and Griffith (1998) and CIOB (2003a) note that employers often argue that insufficient attention is given by universities to developing the key skills required by the industry. Scott and Assadi (1998) from their survey found that construction supervisors lacking in ability to keep records of the construction process and suggest the need for more education or training in this area. Young and Egbu (1992) argued that there is little education and training provision specifically geared towards the management of refurbishment works. Agapoiu *et al* (1995) argue that training have been left out to very small firms who are least able to provide them. They also claim that the training were inappropriate of the local training provision, the formal training lacks relevance to the company's needs, expensive and lacks financial incentives, and companies have been unable to afford time for training.

Construction Industry Council (CIC, 1992) calls for the development of more postgraduate building courses that operate with direct industrial support and with an industry research component. Macdonald (1988) suggests that the construction industry would benefit if all its potential graduate managers were educated in a multi-

disciplinary team environment. Conversely, Burgess (1999) found that the recommendations for a co-ordinated professional education and training as suggested in the CIC's Crossing the Boundaries Commonality Report have yet to be effectively implemented.

CITB (2000a) suggest that training modules in management and commerce should be increased and treated as important as technical skills. Farrell (1999) recommends that investigations be carried out to determine the practicality of legislation being enforced to ensure that all site managers possess a national training certificate in safety management or the equivalent thereof to meet the need for more heath and safety education and training.

4.3.4 Training

Construction News (1997) reports that crisis is just waiting if the poor level of training within the industry continues. The survey by Healey and O'Loughlin (in Farrel, 1999) found that the career progression of first line supervisors is often limited by their lack of training. Gann and Senker (1998) highlight that training provisions in the UK have failed to adapt fully to the modernising industry, while the UK's approach to training and innovation is lacking behind other European countries (Building, 2000). Mackenzie *et al* (2000), emphasise that plans for industry training must be able to accommodate technological change and continuous development that are responsive to the industry's requirements. Gann and Senker (1998) suggest the establishment of a broad foundation based training to which additional skills training can be added when required to meet the changes in training needs.

Clerke and Well (1998) conceives that the UK construction training system is out of step with many of the developments; being employer-led, it is largely confined to the traditional trades and dominated by qualifications broken into narrow task-related units. Their research (Clarke and Well, 2000) on housing construction which found the ratio of site management staff to the number of units built in UK is higher than in Germany and the Netherlands indicates that greater effort is required to control construction output. Farr and Sullivan (1996) conceive the current training as 'traditional', expensive, lacking in context and unable to address changes in technology, and suggest the need for a more on-going process that better contribute to the individual's learning.

D*f*EE (2001) reports that managers, administrators and professionals in construction mostly lack management and team working skills. It suggest that more emphasis on project management skills among first-line supervisors and technicians. CCC University of Southampton (2001) propose the need for greater recognition of the need for the soft skills in the future construction industry.

4.3.5 Linking education and training to the job

Hatchett (1985) in recalling Lemarie's (1982) view stress that although management roles are largely learnt in the workplace and the practice of management is very important, it is impossible for site managers to learn from experience alone. CIOB (1989) argue that the academic achievement in the form of a building degree only half forms the building manager.

Akintoye (1995) repeats the call for education to be linked to the workplace. Farrell (1999) argues that young graduate site managers' performance would be enhanced with

if they had at least some craft-appreciation skills from training or site management experience.

4.3.6 Career progression into site management

Farrell and Gale (1998) identify that career progression route into site management is possible either from craft education or graduate education or a combination of both. The craft route has traditionally been the route to the position of a site manager but this trend has been shifting to structured education and vocational training routes (Howarth and Griffith, 1998; Stephenson and Williams, 2000).

The background that produces the better site manager was frequently discussed (Farrell and Gale, 1998). Wakefield (in Macvicar and Rutland, 1982) argues that better site managers come from craft rather than academic background and Lemarie (1985) believes that craft site managers are more likely to have a higher appreciation for quality workmanship. Constable (1993) reports that craft site managers most frequently obtain quality awards on construction sites and links age and craft background to quality. Farrell (1999) concludes in his research that the industry needs to increase the number of craft/graduate site managers and a craft site manager should receive training before being the sole person in-charge of a construction site. Griffith (1988) supports the idea of site managers developing from an academic background on the basis that new and innovative procurement systems calls for more co-ordinating as well as traditional skills.

4.3.7 The predominant 'mechanistic' management culture within construction

The established dichotomy between the 'mechanistic' and 'humanistic' approach in management literature was discussed earlier in Chapter Three. Whilst there have been

many initiatives to emphasise the application of more people-cantered approach to managing the construction, several studies contend that the dominant 'command and control' approach within the industry have been the barrier in disseminating more emphasis on people development within the industry.

Drucker *et al* (1996) assert that mechanistic management approach in construction also dominate the professional and managerial staff within the industry. Hillebrandt and Cannon (1990) note that the status of personnel functions within the UK contractors are very low. Langford *et al* (1995) suggest that the application of human resource management is constrained by the continuing culture and traditions practiced by construction organisations.

Green (2002) is of the conviction that the absence of more positive efforts to advocate the humanistic approach to the management process within the industry, the continued institutionalised and regressive approach to human resource management within the industry will not result in long-term and sustainable initiatives to develop people within the industry.

4.4 CRITICAL EVALUATION OF THE CURRENT SITE MANAGEMENT TRAINING PROVISIONS

The achievement of the CIOB professional membership the highest level of professional achievement for construction site managers and consequently, the academic, vocational and professional structure been tailored to achieve this professional membership. The industry considers site management for all people related to construction. The response to the need for a detailed structure plan to clearly show the entry and access points, the qualifications in construction and the flexibility to facilitate mutual recognition amongst

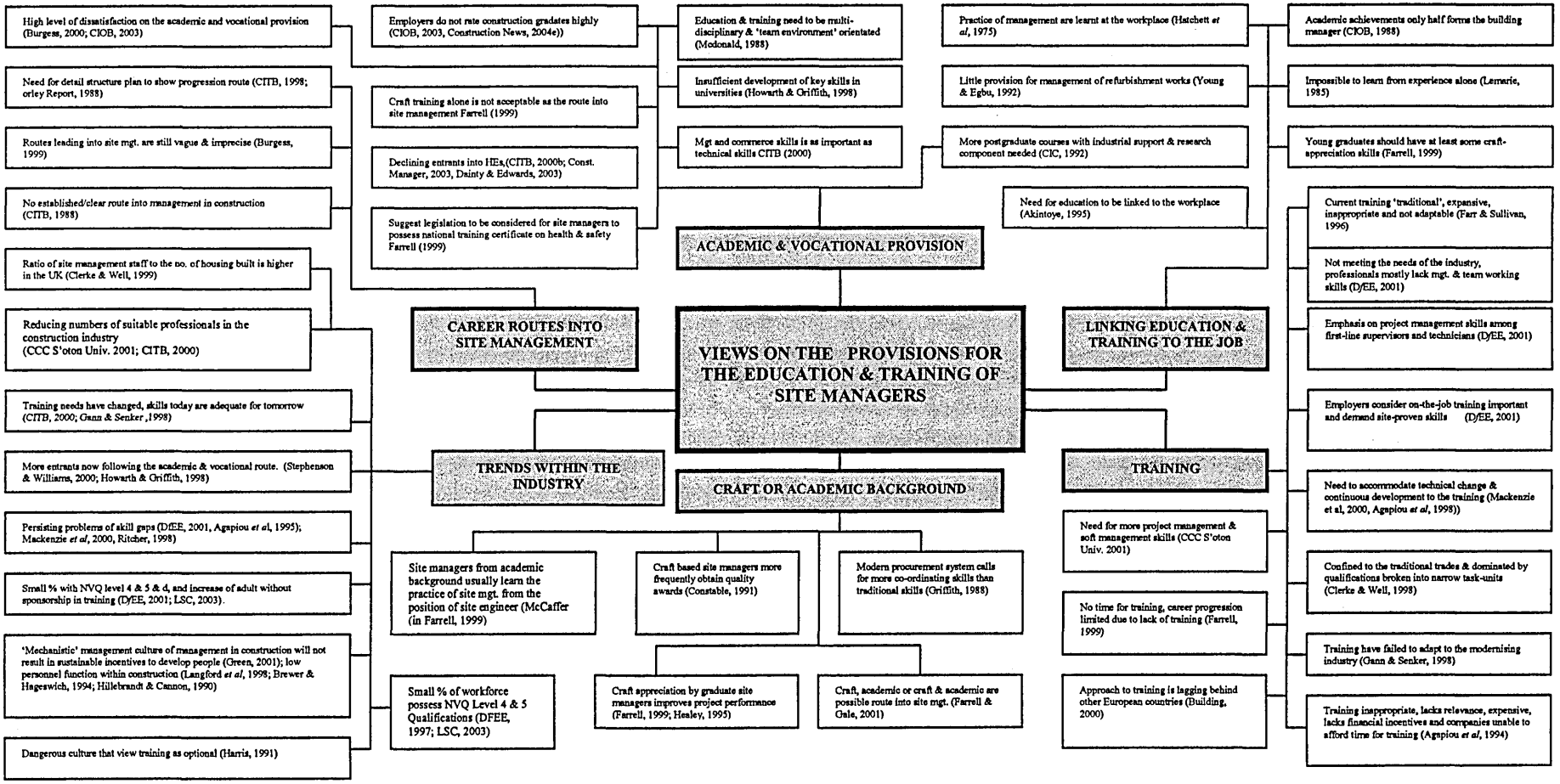

Figure 4.3: Views on the current provisions for educating and training site managers

the various qualifications were clearly exemplified by the CIOB, CITB and GNVQ frameworks shown in Figures 4.3.2.2, 4.3.2.3 and 4.2.3.4. Notwithstanding, the multitude of views from the literature investigations suggest vexing issues challenging the adequacy of the training in meeting the training needs of the industry's site managers.

The critical analysis from this suggests the factors contributing to the problems as follows:

4.4.1 Training offered within the industry

Training for construction site managers at the industry level is contained within the current site management training provisions offered by the CIOB C/DSM and the NVQ/SVQ SS/SM training. To enable them be within reach and applicable to all within the industry, their provisions were designed to offer:

- job-related and competency-based training;
- modular-based training where training units are cumulatively available;
- flexible training where trainees can develop at appropriate pace;
- training linked to a recognised award such as a certificate/diploma; and
- training linked to medium to long-term career development.

The above was embodied in the performance-based training provisions offered at the industry level offered by the NVQ/SVQ and CIOB as discussed in 5.2.3. The features of these schemes which were drawn from the CIOB C/DSM Syllabus (2002) and the National Standards for Building Site Management produced by the Construction Industry Standing Council and CIOB (CISC/CIOB, 1993) are summarised and contrasted against the requirements of NVQ Level 3 and 4, and is shown in Table 4.4.

NVQ/SVQ QUALIFICATIONS TRAINING OUTCOME REQUIREMENTS		CIOB CERTIFICATE/DIPLOMA IN SITI MANAGEMENT (Provision for underpinning knowledge for NVQ/SVQ Level 4)	CITB ADVANCED MODERN APPRENTICE SCHEME (Combines NVQ/SVQ Level 2 &3)	NVQ/SVQ 'TRAINING' PROGRAMMES	
Level 3 CONST. SITE SUPERVISION	**Level 4 CONST. SITE MANAGEMENT**			**SITE SUPERVISORS (NVQ/SVQ Level 3)**	**SITE MANAGERS (NVQ/SVQ Level 4)**
On completion of the training, the site supervisor will have to demonstrate abilities to: (i) Call forward & maintain the required resources for building operations (ii) Plan building operations (iii) Set up & maintain building operations (iv) Monitor & control operational progress, quality & dimensional accuracy	On completion of the training, the site manager will have to demonstrate abilities to: (i) Plan & programme on site construction work (ii) Set up & maintain building operations (iii) Obtain & maintain building site resources requirements (iv) Monitor & control operational timescales & quality	***Training contents (set against the role of site managers in Fig. 1):*** ***1. GENERAL MODULES***			
		General Modules: ➢ Industry & Mgt. ➢ Computing ➢ Improving Managerial Skills ➢ Maintenance Mgt.** ➢ Services Management**	**General Modules:** ➢ Construction & Environment* ➢ Construction Technology & Design* ➢ Analytical Methods* ➢ Graphical Detailing* ➢ Gather & Provide Information for Action** ➢	Nil	
		2. RESOURCES: Staff, Materials, Labour & Plants			
		Classified under: ➢ Managing People ➢ Contractual & Legal Responsibilities ➢ Developing People ➢ Organising & Resourcing Projects ➢ Estimating & Measuring Work	**Classified under:** ➢ Planning , Organising & Control of Resources* ➢ Develop Skills & Help Create Effective Working Relationships**	**Classified under:** ➢ Maintain team & individual performance ➢ Establish working relationships ➢ Organise work operations & activities ➢ Organise resources for the work	**Classified under:** ➢ Establish health & safety at workplace ➢ Manage team & individual performance ➢ Organise resources at work ➢ Organise plant & equipment resources at work ➢ Establish working relationships
		3. RESPONSIBILITIES FOR : Safety, quality, money & time			
		Classified under: ➢ CITB 'Site Management & Safety Training Scheme'* ➢ Estimating & Measuring Work ➢ Managing Quality of Site Work ➢ Project Planning ➢ Project Monitoring & Control	**Classified under:** ➢ Health Safety & Welfare* ➢ Establish & Maintain Dimensional Control of Construction Projects** ➢ Contribute to Preparing, Implementing & Controlling of Work** ➢ Check, Produce & Record Construction Works Information**	**Classified under** ➢ Health Safety in the workplace ➢ Monitor & supervise work operations & activities	**Classified under** ➢ Plan & organise work operations & activities ➢ Monitor & control project operations& activities ➢ Inspect, schedule & implement conservation works

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NVQ/SVQ QUALIFICATIONS TRAINING OUTCOME REQUIREMENTS		CIOB CERTIFICATE/DIPLOMA IN SITE MANAGEMENT (Provision for underpinning knowledge for NVQ/SVQ Level 4)	CITB ADVANCED MODERN APPRENTICE SCHEME (Combines NVQ/SVQ Level 2 &3)	NVQ/SVQ 'TRAINING' PROGRAMMES	
Level 3 CONST. SITE SUPERVISION	Level 4 CONST. SITE MANAGEMENT			SITE SUPERVISORS (NVQ/SVQ Level 3)	SITE MANAGERS (NVQ/SVQ Level 4)
(v) Establish & maintain effective relationships within building team & with customers (vi) Establish & maintain health & safety systems at the workplace (vii) Effectively use operational information	(v) Establish & maintain productive working relationships within the building team (vi) Establish & maintain effective relationships with customers & public including the promoting of the organisation's products & services (vii) Maintain health & safety systems including identifying hazards and assessing risks (viii) Effectively manage & use operational information	***4. SUNDRIES:*** ***Setting-out, pre-construction & Administration***			
		Classified under: ➢ Site Surveying & Levelling	**Classified under:** ➢ Site Surveying & Levelling	**Classified under:** ➢ Site Surveying & Levelling	**Classified under:** ➢ Site Surveying & Levelling
		5. RESPONSIBLE TO: ***Third parties, contractor, consultants & clients***			
		Classified under: ➢ Contractual & Legal Responsibilities	**Classified under:** ➢ Contractual & Legal Responsibilities	**Classified under:** ➢ Contractual & Legal Responsibilities ➢	**Classified under:** ➢ Contractual & Legal Responsibilities
		FEATURES OF TRAINING:			
		➢ Modules may be taken in any order ➢ Min. age 23 yrs old & min. of 2 yrs experience above the level of charge-hand ➢ Offered in a variety of ways: part-time evening, twilight and distance learning ➢ Module * is compulsory ➢ Modules ** are optional ➢ A total of 7 modules (240hrs) required for a Certificate award ➢ Additional 7 modules (240hrs) required for the diploma award ➢ Assessment based on coursework assigned for each module	➢ Modules may be taken in any order ➢ Min. age 23 yrs old & min. of 2 yrs experience above the level of charge-hand ➢ Offered in a variety of ways: part-time evening, twilight and distance learning ➢ Module * is compulsory ➢ Modules ** are optional ➢ A total of 7 modules (240hrs) required for a Certificate award ➢ Additional 7 modules (240hrs) required for the diploma award ➢ Assessment based on coursework assigned for each module	➢ Modules may be taken in any order ➢ Min. age 23 yrs old & min. of 2 yrs experience above the level of charge-hand ➢ Offered in a variety of ways: part-time evening, twilight and distance learning ➢ Module * is compulsory ➢ Modules ** are optional ➢ A total of 7 modules (240hrs) required for a Certificate award ➢ Additional 7 modules (240hrs) required for the diploma award ➢ Assessment based on coursework assigned for each module ➢ NVQ/SVQ Level 3 is comprised of off-the-site modules usually at the start of the 'training' scheme followed by on-the-job 'training' for the modules underlined ➢ NVQ/SVQ Level 4 is undertaken wholly on the on-site assessment and training (OSAT) mode	

Table 4.4: Training provisions offered within the current site management training framework set against the NVQ/SVQ Level 3 & 4 qualifications requirements

Apart from focusing to meet the qualifications standards set out by NVQ, the training are primarily centred to develop knowledge and skills based on the way the task has normally been carried out in managing the construction production operation. Their key strength lies in their variable design which allows flexible training conducted through different modes and their applicability to almost everyone related to site management within the industry.

There has been little evidence to suggest if initiatives to consistently contrast the training provisions against the claims of change in some of the role of site managers has been undertaken appropriately and at the right time, to ensure that 'gaps' implying a shortfall in the training can be traced.

Drawn against the role and tasks performed by construction site managers (drawn from Chapter Three), the NVQ/SVQ SS and SM training were found ambiguous in some key areas. Conversely, the CIOB C/DSM training scheme was found to be more 'structured', prescriptive, detail and specific. Its modules are quite detail in describing the technical aspects of the site managers tasks such as planning, programming, setting-up building operations, resourcing the site, monitoring and controlling resources, health and safety, work operations and cost. The training approach and the outcome to be achieved from the training are more explicit. For both training schemes, other elements relating to site managers' sundry duties such as setting-out, pre-construction, administration, responsibilities to third parties, contractor, consultants and clients, and other general elements relating to information technology (IT), environment, computing, commerce and human management were found to be vague. A specific module on maintenance and services management is present in the CIOB scheme but is absent from the NVQ/SVQ SS/SM training provisions.

To date only about 5,000 site managers have been trained by the CIOB C/DSM since 1990 (CIOB, 2003b) and unofficial sources from CITB suggest that only an average of about 350 to 400 trainees have enrolled annually into their NVQ/SVQ SS/SM training schemes. For both the training schemes, a large percentage of the trainees come the larger construction organisations that provides the training in-house or supports the training for their site managers at the industry level, followed by those from medium-sized construction organisations. Only a very small percentage of trainees from small and micro-construction organisations are involved in these training schemes to reflect the same the phenomenon of poor support for the poor training amongst the smaller construction organisations to the training schemes. These figures are clearly short of the numbers required by the industry. Due to the absence of data and studies, it was not possible to evaluate the effectiveness of these schemes, the number of site managers passing the training schemes that have continued to progress to more advanced site management training courses or if they had continued learning, and if so, how.

4.4.2 Competency assessment and training evaluation

Although the training provided have acknowledged the CIOB (1989), Hatchett *et al* (1975) and Farrell's (1999) views on the importance of learning at the workplace and for experience to be linked to education and/or vice versa (Akintoye, 1995; Lemarie, 1985), the appropriateness of the approach to assess the competency of the trainees and evaluate the training, warrants further study. It may be argued that current approach to assess the trainees competence which are mainly based on evidence of portfolios submitted for work-done, without careful and a proper system to authenticate the documents would not reflect true competency.

Similarly, the absence in the mechanism that can ensure a systematic and continuous feedback from training evaluations tends to render the trainings to be linear and difficult to improve. This was viewed from the framework of training best practice (as discussed in 3.5.1 Chapter Three) which suggest that training must be a cyclic, dynamic and evolving process if continuous improvements are to be ensured. The one-off nature of training appraisals and, without the involvement of the managers, line managers and trainers to assess performance (Torrington and Hall, 1991; Odini, 2000) would likely result in assessments which do not accurately assess actual competency.

4.4.3 Little/no time for training

Notwithstanding the availability of effective site management education and training frameworks within the industry, the problem of site managers finding time for training (Farrell, 1999) compounding the negative perception within the industry that training is optional (Harris, 1991) is an obvious barrier towards educating and training site managers.

4.4.4 Support for site managers' career development

Site managers are not normally considered the automatic choice and have to compete with professional from other disciplines for higher management positions in construction organisations.

The criticism of inadequacies in human skills (CCC University of Southampton, 2000), management and commercial skills (CITB, 2000b), multi-disciplinary and 'team-environment' orientation (Macdonald, 1988) propounds the view that more training in these areas are required if their ability to assume higher management positions is to be enhanced.

4.4.5 Implications of new training initiatives and CSCS

Initiatives to expand and improve the site management training provisions within the industry are continuing as exemplified by the accreditation of the CIOB's SMETS to form the now C/DSM (CIOB, 2002b), the establishment of the Modern Apprentice Framework for Construction (CITB, 2003), the accreditation of the Edexcel BTEC qualifications to the National Qualifications Framework (NQF) (Edexcel, 2003) and the focus on more learning-based approach in the CIOB's New Education Framework. Coupled with the initiative to address the reluctance to train through the Construction Skills Certification Scheme (CSCS), these are seen by many within the industry as a positive move that will boost demand for construction training (LSE, 2003). Prior to its implementation, participation to training schemes offered at the industry level has been very disappointing.

Although the significance of the initiatives mentioned in strengthening the framework for site management education and training is acknowledged, the key issues of adequate and effective training provisions for site managers is continuing. While the CSCS may force more site managers to be trained, it is uncertain that such a 'command and control' approach will promote willing training participation and create a sustainable training culture within the industry without improving the current training provisions.

4.4.6 Other problems impacting on the training of site managers

Notwithstanding the recent initiatives taken to improve site management training provisions, some critics continue to propound the difficulties and inadequacies encountered with training that relate to the site management education and training provisions.

The critical factors that highlight the under-achievements are:

- the continuing poor levels and consideration for training (Harris, 1991; CITB, 2000a; D*f*EE, 2001)
- the need for the academic and vocational provisions to be better supported with the right training or vice versa (Hatchett *et al*, 1975; Gann and Senker, 1998; Howarth and Griffith, 1998; Akintoye, 1995; CIOB, 2003a) and to be more able to support site managers for career enhancement opportunities within their employment context (Morley Report, 1986).
- the design of training provisions which does not reflect the actual nature of work carried out by site managers in construction projects (Young and Egbu, 1991; Macdonald, 1988; CCC University of Southampton, 2001; Howarth and Griffith, 1998; D*f*EE, 2001)
- the inability of the current provisions to accommodate changing practices within the industry (D*f*EE, 2001; Howarth and Griffith, 1998; Macdonald, 1988; CCC University of Southampton, 2001), and
- the growing problem of unsatisfied demand for building graduates (Lighthill Report, 1986, CITB, 2000a) and the declining number of entrants into institutions of higher learning (CITB, 2000a; CIOB, 2003a).

4.5 CHAPTER SUMMARY

The lack of research on the outcome of the current training provisions has led to absences of data to substantiate the quantity and quality of site managers that have progressed through the current training provisions. Drawing from the findings from Chapter Two and Three which highlights the fragmented nature of the industry, the varied role of site managers, change and the influences impacting on the site managers,

the emerging findings from this chapter tends to suggest that much more needs to be done to improve the design, delivery and outcomes of the site management training offered if they are to be more effective.

The research posits that a deeper understanding of training and the variables that shape site managers training needs is fundamental if the need for effective site management provision which will consequently train site managers more effectively within the industry is to be met. This underpins the need for the current training framework to be re-examined and improved by assimilating new approaches that is able to promote more effective and continuous learning of site managers. A critical re-examination of the elements that support the whole current training system is necessary for these under-achievements are to be addressed.

CHAPTER FIVE
Research Design & Methodology

5.1 INTRODUCTION

This chapter will be the start of the main chapters on the research design and methodology. It provides the critical discussions on the approach selected to develop the research activities to achieve the research objectives, and the protocol observed to maintain the validity and reliability of the research.

It begins with the discussions on the approach adopted to conceptualise the research theoretical framework. The definitions, concepts and themes drawn from the literature review are reaffirmed, and the approach to operationalise the research is critically discussed. The model to conceptualise the research elements and the best practice training framework of the research is also presented. The research problem and research questions are established, the research variables clearly underlined and the dependent and independent variables are clearly distinguished. The discussions on the pilot research study undertaken are provided together with the justification on the approach and research the instrument selected for the data collection. The framework of the discussions within this chapter will be used to structure the discussions within the subsequent chapters of the research.

5.2 THE RESEARCH PROCESS

The schematic view of the activities of the research process to achieve the objectives and aim of this research is illustrated in Figure 5.2. The activities undertaken during for each of the processes shown in the flowchart are discussed in detail within the related sections of the research.

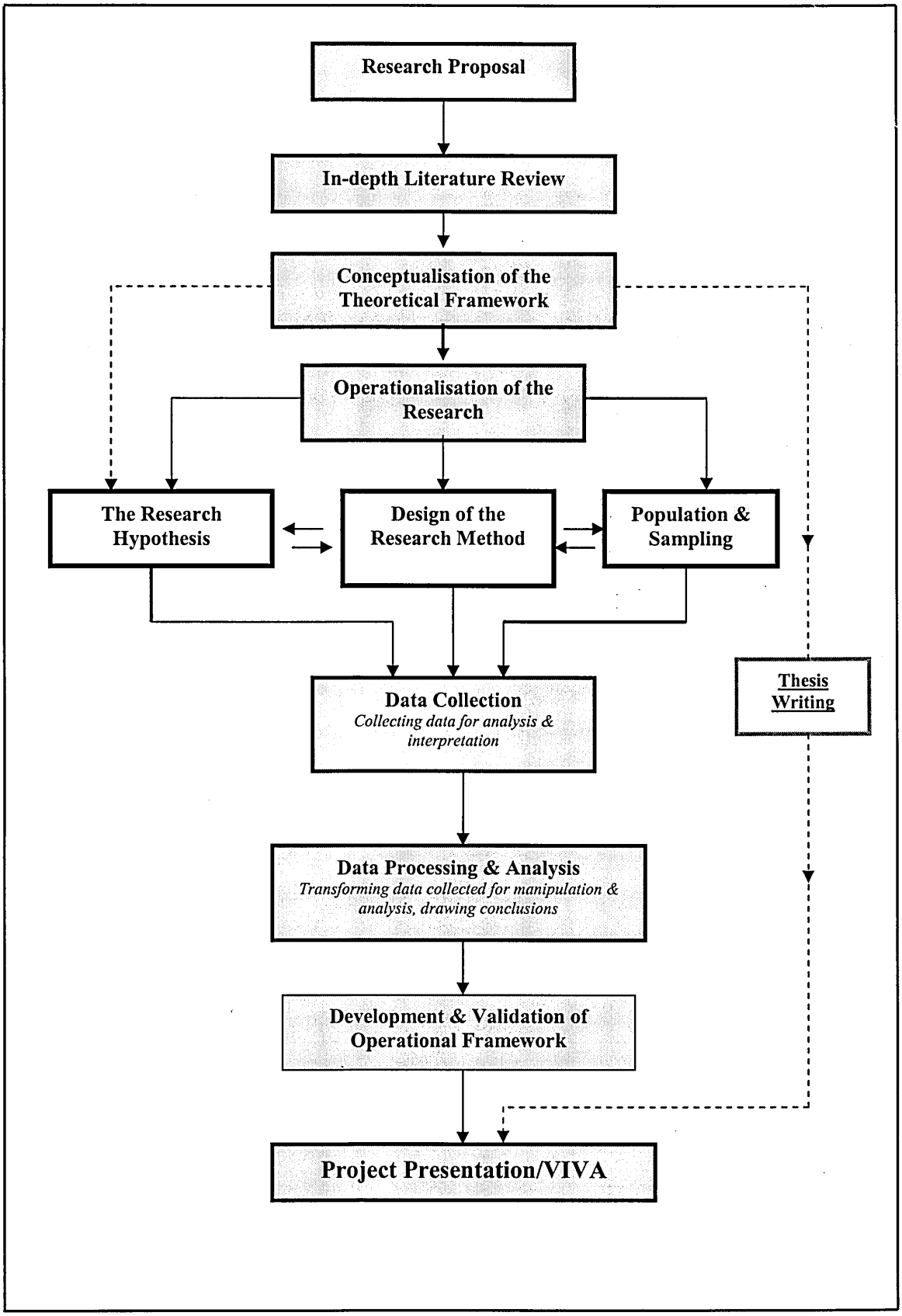

Fig. 5.2: Flowchart of the research process

5.3 VALIDITY AND RELIABILITY

Appreciating the need to articulate the research carefully and to demonstrate how validity and reliability was achieved for the research, the views of Burns (2000), Miles and Huberman (1994), Kirk and Miller (1986), Nechmias and Nechmias (1992), Denzin and Lincoln (1998), and Mason (1997) were drawn to structure the research processes.

It was conceived that the research validity needs to be established by clearly demonstrating how the causal phenomenon was conceived; how the research statement, research questions and hypotheses/propositions were established; how the research investigations were structured; how and why the research instruments were chosen; what empirical tests was selected; and how were they administrated to derive at the research findings. Consistency and transparency of the research processes needs to be maintained throughout the process. Reliability was conceived from the perspective that the study can be replicated, and supported by the assumption that two or more people can have similar interpretations by using the same categories and procedures.

Parallel with these concepts, the structure of the research investigations was drawn. Drawing especially from Miles and Huberman (1994) and Denzin and Lincoln (1998) on triangulation as the approach most appropriate to establish reliability, three key stages of the research process were considered for triangulation:

i. Conceptualisation of the literature framework where data from various sources were triangulated to establish the research questions and hypotheses;

ii. The quantitative research investigation where data were drawn from three key parties related to the training investigated; and

iii. The qualitative research investigation which was triangulated with the quantitative research findings and the research conceptual framework.

The detailed discussions on the approaches adopted to observe the research validity and reliability is provided within the preceding sections and chapters of this research.

5.4 CONCEPTUALISING THE THEORETICAL FRAMEWORK

5.4.1 The theoretical framework

The views in literature by Naoum (2002) on 'critical appraisal of literature review'; Rossman and Rallis (1998) on 'conceptual framework'; Babbie (1995); Nachmias and Nachmias (1992) on 'research problems'; Balnaves and Caputi (2001) on 'defining the enquiry'; De Vaus (1994) on 'the process of theory construction'; Babbie (1997), Maxim (1999) and Miller and Brewer (2003) on 'nature of causation' were drawn to establish the approach to critically review the literature and develop the research conceptual framework.

In observing the procedure to support the external validity of the research, the theoretical framework for the research was first developed by conceptualising the phenomenon drawn from the literature review and by establishing the operational definitions for the research. This entails the critical review of the definitions and concepts derived from the primary and secondary literature findings together with their causal relationships. Constructs were then developed, reaffirmed and validated before being adopted to present a systematic observation of the theories within the theoretical framework.

The theoretical framework was determined by firstly specifying exactly what is to be investigated. This was undertaken by critically analysing the findings from the literature investigations to determine precisely the research problem and formulation of a clear research question, which De Vaus (1994) and Robson (2002) stress is important in developing the research design. Corresponding to the views of Robson (2002), Maxwell (1996) and Novak and Gowin (1984) on the benefits of a diagrammatic illustration of the evaluation to express the theory of what is happening and why, the diagrammatically illustration of the evaluation is produced and shown in Figures 5.4.

It was conceptualised that within the industry scenario, where in general interest in education and training is vastly lacking, there appears to be a general agreement within the sector to the performance-based, modular, qualification-based and on-the-job approach to site management training that is offered at the industry level. However, there was strong evidence to imply that majority of construction organisations exhibit little interest in engaging their site managers to the current site management training provisions offered. Whilst there was evidence of support for the current site management training provisions, equally there were also arguments that converge to challenge the adequacy of the provisions in producing the site managers needed by the industry. The views of various parties within the industry related to site management training were drawn and the emergent findings suggest that this has contributed to its inability in assisting the industry meet the needs for trained site managers. Drawing from the *'Conceptual framework of training best practice drawn for the research'* (3.5.2, Chapter Three), and the *'Views on the emergent findings of the Current Site Management Training Provisions'* (4.4, Chapter Four), two key propositions appear to offer the justification for this phenomenon, as follows:

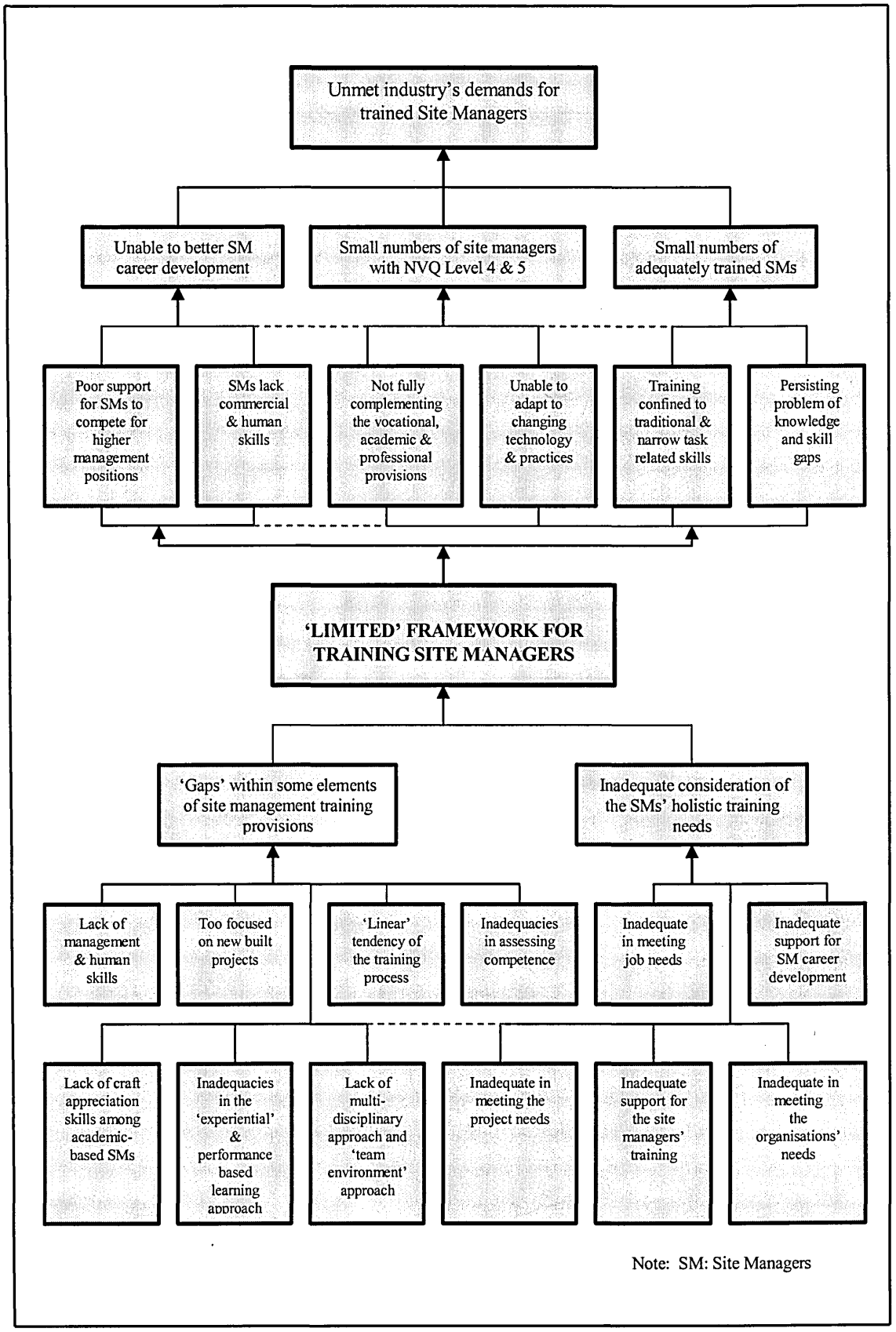

Fig. 5.4: Conceptualisation of the Literature Framework

(i) The provisions within the current site management training offered at the industry level is 'limited' to adequately train site managers.

The key factors behind this were supposition that the training provisions offered has been:

- inadequately supported with the right academic and vocational provision and vice versa (4.3.3, Chapter 4);
- confined to narrow and tasks related units (4.4.3, Chapter 4);
- lacking in effective evaluation (4.4.2, Chapter 4); and
- too focused on new build projects (4.4.6, Chapter 4)

(ii) The current site management training provisions has not fully considered the holistic training needs of site managers.

Evidence advocating this supposition was the need for the current training provisions to consider:

- better support for the site managers' training and career development (44.4, Chapter 4);
- improving the training to better develop site managers for their key roles in managing construction projects (4.4.2 and 4.4.3, Chapter 4); and
- the site managers' background, i.e., their career progression path, the project experience, types of project they are engaged in and construction organisations they serve (2.4.3, Chapter 2)

It was conceived these 'inadequacies' or 'gaps' have significantly limited the framework for training site managers. This was exemplified by:

- the lack of interest amongst the employers/construction organisations to train their employees including the site managers (Harris, 1991), (CITB, 2000a; D*f*EE, 2001);
- the small numbers of site managers with NVQ level 4 and 5 qualifications (D*f*EE, 2001);

- the inability of the training provided to complement the academic, vocational and professional provision (Burgess, 1999; CIOB, 2003a; Akintoye, 1995; Macdonald, 1988); and
- the inability of the framework to support better career opportunities for site managers within their employment (Morley, 1986; Burgess, 1999) that have resulted in the small number of trained site managers within the industry.

Consequently this has significantly contributed to the unmet industry's demands for trained site managers.

5.4.2 The research question

Mindful of the purpose and implications of the research question in establishing the research design and to develop the hypotheses to meet the aims and objectives of the research, the following question was posed for this research:

> *"What are the factors within the current training provisions that have contributed to limit the framework for training site managers?"*

In seeking the answers to the research question, a critical analysis was made on the literature framework. The contrast between the current site management training provisions against the principles of training best practice suggest that the 'inadequacies' or 'gaps' within some of the training provisions were the factors that have contributed to 'limit' the framework for training the site managers. Two major propositions emerge to offer the answers to the research question posed, they are:

(i) *The holistic training needs of the site managers have not been fully considered within the current site management training provisions.*

Training best practice (3.5, Chapter Three) advocates the theory that the effectiveness of training is contingent upon its ability to meet the holistic training needs of the trainees, their employer and their job. The findings from the investigations tend to suggest that this has not been fully considered within the current training provisions. Central to this proposition is finding that although there are roles that are common for all site managers, there are variables in what site managers do or are expected to, the type of project they are undertaking and construction organisation they are serving (2.4.3, 2.4.4 and 2.5.1, Chapter Two). The was augmented further by the need for the site managers to be better trained for job (4.3.4, Chapter Four); better supported for their training and career development (4.3.2, 4.3.3, 4.3.5, Chapter Four).

(ii) *The current site management training approaches have not been flexible enough to offer more effective training.*

The conviction that training must be perceived as a dynamic cyclic process was found in literature review on training best practice (3.5, Chapter Three). It highlights the importance of precisely addressing the training needs specific and collective to the trainees, the organisation and the job; and concurrent with changes taking place at the job site. Whilst the industry's need to maintain a formal and structured competency or performance-based site management training to complement the existing academic, vocational and professional structures at the industry level (4.4.1, Chapter Four) was acknowledged, the nature of the design of the current training processes tends to somewhat limit the training approach within the prescribed modes (see Table 4.3, Chapter Four). The consequence of this was related to the discussions in discussed in 5.3.1.

Continuing improvements and expansion to the current site management training provisions is considered important if the industry is to be able to meet the needs for trained site managers. With the available existing infrastructure for training supported by the established structures for academic, vocational and professional education and training, this research posits that an improved framework for training site managers within the industry is possible through the process of re-learning the whole training initiative. Underpinned by the emergent themes from the research conceptual framework and the concepts drawn from the *Conceptual framework of training best practice* in 3.5.2, the objective analysis of the above statement found two major approaches which proposition the strategy for improving the current provisions for site management training. The first approach is through:

i. re-assessing the training needs of the site managers
ii. through the application of best practice approaches to the whole training processes.

In consideration of the need to transform the conceptual framework of the research to enable the development of tangible hypotheses from which suppositions can be developed and tested for this research, these propositions were considered as the key determinants for the hypotheses development.

5.5 OPERATIONALISING THE RESEARCH

Recognising the importance of understanding the philosophical thinking that underpins research and its consequent influence to the research epistemology and ontology, views on research 'positivism' and 'instrumentalism' were considered. This was approached by undertaken by drawing the views of Hindess (1977), Stern and Khalof (1996), Maxin (1999), Athern (1994), Babbi (1997) and Bouma and Atkinson (1995).

The research found the subjective debate on issues relating to the validity, applicability and extent to which each paradigm can be applicable continuing and extensive. For the purpose of the research, it was drawn that the positivist research thinking suggest that reality can only be known on the basis of experience and that the object of knowledge can only be what is given or what can be given in experience. The theoretical assumptions need to be confirmed mostly with empirical data and causality should be fundamentally based on mechanistic causal models measured against facts of experience. On the other hand, the 'instrumentalist' research thinking argues that a set of agreed criteria identified for research can also establish causal relationships on the justification that researchers are faced with stark options of mechanistic causal models or the abandonment of narrative explanation if the total positivist views was observed strictly in most research.

In contending with the two differing research thinking, the research take the view that the 'instrumentalist' approach is more appropriate for the research on the basis that within the constraints of time and resources, the research approach is best dealt with just as any theory might be. The problem of asserting 'realness' to concepts as suggested by positivist, if applied within this research, may lead to problems of infinite reduction of the theory and avoid unsolved philosophical problems surrounding whether causality exist. To circumvent the positivist argument on causation, the research takes the view of Maxim (1999), Babbi (1997), and Bouma and Atkinson (1995) that suggest that causal models can be adopted for as long as they can meet the three fundamental conditions of:

(i) regularity of occurrence or covariance between cause and effect;

(ii) asymmetry between cause and effect; and

(iii) non-spuriousness within the cause-effect within the relationships is observed.

This was further reinforced by their views that suggest that the logic causation in developing research hypothesis can be established when they can demonstrate that:

(i) the dependent and independent variables must be empirically related to one another;

(ii) the independent variable must occur earlier in time than the dependent variable; and

(iii) the observed relationships cannot be explained away as the artificial product of the effect of another earlier variable when developing hypotheses.

The detailed discussion exemplifying the application of the concepts discussed was as follows:

5.5.1 Research hypotheses

The research hypotheses were developed in full awareness of what hypotheses, quantitative and qualitative research are, and their implications. Weisberg *et al* (1996) conceive that a hypothesis is a statement of the causes of phenomenon and is necessary in research to understand how concepts can be operationalised while May (1997) see hypothesis as a conjecture that is deducted from a theory, when if found to be true will support the theory. Holt (1997) adds that a hypothesis is a suggested explanation of a group of facts or phenomenon either accepted as a basis for further verification or, accepted as likely to be true.

The significance of independent and dependent variables in hypotheses were also underlined. Fellows and Liu (1997), Kinnear and Gray (1994) and Maxim (1999) were common in describing hypothesis as a statement that conjures suggestive relationship between an independent and dependent variable. It is tentative because they can only be confirmed only after they have been empirically verified. Bouma and Atkinson (1995) suggest that it is a statement that asserts a relationship between two or more concepts and is developed to order to focus the aim of the research. In judging usable hypotheses, Goode and Hatt (in Miller, 1991) suggest that they must be conceptually clear, should have empirical referents, and must be specific, related to available verification techniques and related to a body of theory.

The distinction between quantitative and qualitative research was also drawn. Robson (2002) sees quantitative research as hallmarked with a very substantial amount of pre-specification of what has to be done and should take place before getting into the research study which Maxim (1999) terms as '*hypothetic-deductive*'. Conversely both of them see qualitative research as the opposite and is characterised with much less pre-specification taking place, and the research design evolves, develops and unfold as the research proceeds. Naoum (2002) identifies quantitative research from its focus on objective fact-finding based on evidence and records, to test or confirm theory/concepts of the research with hard and reliable data, whereas qualitative research is to measure attitude, opinions and perceptions with the theory/concepts emerging/developing during the research investigation. Rossman and Rallis (1998) identify qualitative research as seeking to answer questions with the purpose of learning and generating new understandings that can be used in the social world. Nachmias and Nachmias (1993) typify quantitative research approach as theory-before-research and qualitative research approach as research-then-theory.

Drawing from the above, and mindful of the co-relational nature of the theory and propositions developed to achieve the aim and objectives set for the research, both quantitative and qualitative methods were built into the research design. To enable the research process three hypotheses were developed as follows:

Hypothesis 1: *"The current CIOB C/DSM and NVQ/SVQ SS/SM training provisions can be improved with better understanding of the holistic training needs of site managers"*

Hypothesis 2: *"The current CIOB C/DSM and NVQ/SVQ SS/SM training provisions can be improved with the adoption of best practice approaches within their training processes"*

Hypothesis 3: *"An improved operational framework for training site managers can be developed within a framework which accommodates the improvements within the training provisions"*

The 'cluster-causation' nature of Hypothesis 1 and 2, as conceived from Miller (1991), presumes that causes converge to produce a change. The substantial amount of theory developed during the literature review and during the concpetualisation of the literature framework preceding the development of Hypotheses 1 and 2, suggests the 'theory-then-research' and quantitative approach to the research investigations. This entails objective fact-finding investigations to confirm the theory and propositions developed by the hypotheses within the theoretical framework. In view of the ordinal nature of data sought, the Likert Scale was used as the measurement tool. The research approach will test the propositions; if the proposition is rejected by the empirical data, changes will have to be made to the theory; but if the theory is not rejected, the propositions may

be selected. The *current site management training provisions* i.e., CIOB C/DSM and the NVQ/SVQ SS/SM training are referred to as the dependent variables for both Hypothesis 1 and 2. *The holistic training needs of site managers* are the independent variable for Hypothesis 1 whilst *Best Practice approaches to the training processes* were the independent variables for Hypothesis 2.

Hypothesis 3 is directed to establish the relationship between improved provisions for training the site managers with expanding the framework for training site managers. The application of the term "*can be developed*" within the hypothesis is intended to seek views of the presumed contingent relationship between the training provisions and the framework for training site managers. This is to enable the generation of new understanding that can be used to establish if an improved framework for training site managers based on the research training best practice can de developed. It tests for the relationship between the framework for site management training and the improved site management training provisions, and it contains only one independent variable i.e., *an improved framework for training site managers*.

5.5.2 Research variables and their measurement

Drawing on the significance of operationalising the research through the formulation of sub-research via sub-hypotheses to structure research inquiries as propositioned by Robson (2002), Naoum (2002), Nachmias and Nachmias (1993) and Flick (1998), sub-hypotheses were developed for the hypotheses.

The design of the enquiry which encompasses the variables and their measurements within the hypotheses and sub-hypotheses are discussed as follows:

i. Hypothesis 1:

"The current CIOB C/DSM and NVQ/SVQ SS/SM training provisions will improve with better understanding the holistic training needs of site managers"

This hypothesis posits that there are 'inadequacies' or 'gaps' in considering the holistic needs of site managers' training within the current site management training provisions. It propositions that the reconsideration of these needs would improve the current training provisions. The elements of holistic needs of the site managers training underlined for testing within this hypothesis are:

(i) training that is able to meet the needs of the site managers, employers/construction organisation and their job;

(ii) training that is able to better prepare them for all the roles required to manage the construction project; and

(iii) the need for better support for the site managers' training and their career development within their employment.

Sub-hypothesis 1a: *"Consideration for meeting the collective needs of the site managers, their employers and their project's will improve the training provisions"*

This sub-hypothesis was developed on the proposition that the objectives of the current site management training provisions tends to be 'demand-led' which centre mainly on performance outcomes at the job, drawing from the emphasis underlined within the CIOB C/DSM and the NVQ/SVQ Level 3 and 4 site management training. This contrasts quite significantly with the principles of training best practice (Bramley, 1996; Truelove, 2001; Chiu *et al,* 1999) that maintains that such approach tends to neglect the

employees and the job needs. This hypothesis test this contrast and considers the emergent training needs that are inadequately considered as key factors that will need to be improved within the current provisions.

To enable the investigations on the provisions of the training in meeting the site managers' job needs, the roles and tasks performed by site managers in construction projects was firstly investigated. Training needs based on best practice were conceived to be contingent upon roles that are needed to be performed at the workplace (Bentley, 1991; Osborne, 1996; Wilson, 1999; Bee and Bee, 1998; Chiu *et al*, 1999). The research literature review suggest that the site managers job needs are significantly influenced by what they perform in their job, which in turn, is influenced by the variables of their background, their employers and the type of projects which they are engaged in (3.5.6 Chapter Three).

This was drawn from the literature findings which suggest the contingent nature of the roles required to be performed by site managers with their background (i.e., craft, academic or craft and academic based), the type of construction project and the type/size of the construction organisation they are engaged-in (Arshad, 1997; Mustapha, 1990; Brown, 1983; Burgess, 1999; Gunning, 1983; Sorrell, 2000; Houlston, 1999; Young and Egbu, 1992), and the argument that the current site management training provisions have confined the training narrowly to site management roles based on traditional functions (5.4.1ii, Chapter Five).

Sub-hypothesis 1b: *"The training provisions will improve with training that better support the site managers' career development needs"*

The literature review (4.2, Chapter Four) propounds the principle that training should be synonymous with the development of the people within organisations (Martin, 1998; Gravan, 1997; Mabey and Iles, 1994; Osborne, 1996; Mullins, 2002). Against the scenario when less consideration is given to training within the industry and where 'mechanistic' approach of management in construction is dominant (5.4.5, Chapter Five), it was propositioned that training that better support the site managers' development needs will improve the provisions for training site managers.

The principles of Abraham Maslow's 'hierarchy of human needs' (Handy, 1999) was underlined as the tool for the inquiry. The site managers' 'belonging/love needs' and 'esteem needs' of site managers are considered for the investigations on the assumption that the site managers' 'safety needs' i.e., basic requirements within the employment e.g., pay, job security (at least until the end of the project duration), safety etc. have already been met within their current employment.

Three key variables respondents were considered for sub-hypotheses 1a – 1c, they are:

(i) site managers;

(ii) employer/construction organisation; and

(iii) training organisations/colleges

This was on the justification that they are the key parties in the training and are collectively responsible for determining the training needs (Training Best Practice, 4.4.1i, Chapter 4).

Against the supposition that site managers from different progression routes into site management have different training needs (Farrell, 1999), and different sizes of construction organisations and types of construction projects require site managers to

shoulder different responsibilities and perform different tasks (Arshad, 1997; Mustapha, 1990; Brown, 1997; Burgess, 1999; Gunning, 1983; Sorrell, 2000; Houlston, 1999), four sub-variables within the respondent site managers are underlined, they are:

(i) their progression path into site management (craft, academic or both);

(ii) their project experience (new building, existing-build or other types of construction works);

(iii) the type of construction project that they are engaged in; and

(iv) The size of the construction organisation that they serve.

Based on the same proposition, two sub-variables are considered for the employer/construction organisations:

(i) Their size which was considered based on the DTI (2003b) classification where small firms are recognized as employing less than 49 employees; medium sized firms with 50 – 249 employees; and large firms with more than 250 employees.

(ii) The construction activity/s carried out (new building, existing-build or other types of construction works)

Data from employers/construction organisations are drawn from feedback obtained from their project manager, contracts manager, construction manager, training manager, etc. (hereinafter termed as senior managers) on the basis that they directly manage the site managers and that they represent the employer/construction in determining the training for the site managers.

Training organistions/colleges providing the CIOB C/DSM and NVQ/SVQ SS/SM training were the third variable within this hypothesis. Data sought from them were

considered very significant as they are the party directly responsible for implementing the training at the industry level and their direct involvement throughout the training process.

ii. Hypothesis 2:

"The CIOB C/DSM and NVQ/SVQ SS/SM training provisions will improve with the adoption of best practice approaches within their training processes"

This hypothesis tests the proposition that the adoption of best practice approaches to training processes will improve the current site management training provisions. Similarly, the training processes adopted by the site management training provisions offered by the CIOB and the NVQ/SVQ Level 3 and 4 training provisions were outlined for the inquiry.

As in Hypothesis 1, to facilitate the data collection and consequent testing of this hypothesis, four sub-hypotheses were developed as follows:

Sub-hypothesis 2a: *"Improving the training needs analysis (TNA) based on best practice approaches will improve the training provisions"*

Best practice training proposes that the primary focus of TNAs are to identify knowledge and skill 'gaps' and this must be the foundation of any training initiative (4.5.1i, Chapter Four). The findings from the investigations on site management and the role of site managers (3.3, Chapter Three) suggest that site management covers a wide scope of activities and that the roles of site managers are encompassed within a whole range of duties which varies with the size, type and nature of the construction

projects and the organisation employing them. However, the findings from the evaluation (5.4.2, Chapter Five) tends to suggest that the holistic training needs of site managers have not been adequately met to proposition that the TNA approach to the current site management training needs to be improved.

This sub-hypothesis investigates the proposition that the adoption of a best practice approach to the TNA will improve the training provisions. The measure of the significance of the variables within this hypothesis was drawn from the supposition that:

(i) TNAs should be carried out at the organisational level, the job-level and the person level (Bramley, 1996; Truelove, 2001);

(ii) data from the study or evaluation of previous training where corrective action can be introduced to ensure an ever improving training programme (Wade, 1995; Johnson, 1997); and

(iii) through discussions between the trainer, the managers or line managers and the trainees if possible (Fletcher, 1997).

Sub-hypothesis 2b: *"The training provisions will improve by expanding the training design with best practice approaches"*

Against the argument that training provided within the industry has not actually reflected the competency at the job (Burgess, 1999; CIOB, 2003, Gann and Senker, 1998) and supported by the literature investigations (4.4.1, Chapter Four) that suggest the appropriate design of the training process is one of the fundamental factors that contribute to the training outcome, this hypothesis tests the significance of the proposition that application of best practice approaches to the design of the training will improve the training provisions.

The measure of adoption of best practice elements during the design the training underlined for the inquiry was:

(i) application of well-developed procedures that mesh with the site managers' project operations (Adamson and Caple, 1996);

(ii) training that match the training needs, the organisation project/organisation culture and the management style (Johnson, 1997; Osborne, 1996);

(iii) involvement of the trainer, trainees and line managers (Reid and Barrington, 1999; Fletcher, 1997); and

(iv) competency that is based on explicit measurable goals (Johnson, 1997; Fletcher, 1997).

Sub-hypothesis 2c: *"Expanding the approach to train based on best practice will improve the training provisions"*

This sub-hypothesis was developed from the supposition that there have been dissatisfactions on the training methods. The evaluations (5.4.3, Chapter Five) infer that weakness during the implementation of the training has resulted in the inability to produce the competency required at the workplace (Burgess, 1999; CIOB, 2003; Clerke and Well, 1998).

Best practice training suggests that appropriate training methods are important during the implementation of training (Abella, 1987; Fletcher, 1997). The measure of the significance of appropriate training methods propositioned by this hypothesis was:

(i) the extent to which training is detached for off-the-job training (Fletcher, 1997);

(ii) extent to which on-the-job training follows the guidelines of the training programme (Fletcher, 1997); and

(iii) the method which training is conducted i.e., free-learning, guided learning, lectures/discussions, presentation and induction (Johnson, 1997; Bentley, 1991; Thomson, 1990; Reid and Barrington, 1994).

Sub-hypothesis 2d: *"Improving the approach to evaluate the training based on best practice will improve the training provisions"*

There has been substantial evidence that argue the effectiveness of the current training provisions (Farrell, 1999; Burgess, 1999; CIOB, 2003a; D*f*EE, 2001; Akintoye, 1995; Clerke and Well, 1998; Farr and Sullivan, 1996; Building, 2000). This sub-hypothesis tests the proposition that improving the approach to evaluate training based on best practice will improve the provisions for training site managers. The measure of the evaluation based on best practice that would improve the training provisions are:

(i) to establish the degree it is worthwhile to evaluate the training (Wade, 1995);

(ii) impartiality (Torrington and Hall, 1991);

(iii) the parties involved in the evaluations (Torrington and Hall, 1991; Odini, 2000);

(iv) clarity of what is assessed (Fletcher, 1997);

(v) extent of evaluation during the whole training process (Wade, 1996); and

(vi) applicability of the evaluation for the next training programme (Wade, 1995; Johnson, 1997).

As in Hypothesis One, the three key variable respondents were considered for sub-hypotheses 2a – 2d. The measure of the best practice approaches were identified from the elements of training best practice established from the findings from 4.4 in Chapter Four. In conceiving that best practice promotes a cyclic approach to the training process, where the findings from evaluations of the training initiative needs to be fed-back into the next Training Needs Analysis (TNA) stage of the training process, sub-hypotheses 2a and 2d are designed to investigate if this 'cycle' can be enhanced within the current training provisions.

iii. Hypothesis 3:

"An improved operational framework for training site managers can be developed within a framework which accommodates the improvements within training provisions"

Following on from hypotheses 1 and 2, the empirical examination of this hypothesis was to investigate the proposition that an improved operational framework for training site managers can be developed within the current site management training framework by accommodating the of the improvements propositioned by the Hypothesis 1 and 2. The three key parties involved in the CIOB C/DSM and NVQ/SVQ SS/SM and 4 site management training i.e., site managers, senior managers and training organisations/colleges were underlined as the parties (variables) from which data will be sought.

A qualitative research approach is proposed on the rationale that better understanding on the opportunity of developing the improved framework can be achieved through in-depth data from opinions, views and perceptions. Rich and deep nature of data was required for this inquiry. Three sub-hypotheses were developed as follows:

Sub-hypothesis 3a: *"Considerations for the holistic training needs of site managers identified in Hypothesis 1 can be incorporated within the current training provisions to improve the frameworks for training site managers"*

This sub-hypothesis seeks to investigate the proposition that the consideration for the holistic training needs of site managers can be developed within the current site management training provisions. This is subsequent to Hypothesis 1 that propositioned that better understanding of the 'holistic' needs of site managers will improve the current training provisions.

On the provision that better understanding of the 'holistic' training needs of the site managers would improve the current site management training provisions, it is essential to establish whether this can be achieved. If this were possible, "*Would expansion of the current training provisions with the consideration of the 'holistic' needs of the site managers entail significant expansion or adjustments to the current training provisions?*"; "*Is so, could such expansion or adjustments be achieved without obscuring any of the current site management training provisions?*"

Sub-hypothesis 3b: *"The best practice approaches identified in Hypothesis 2 can be adopted within the current training processes to improve the frameworks for training site managers"*

This sub-hypothesis investigates the supposition that the adoption of best practice approaches to the training processes can be developed within the current site management training provisions. The central question to this inquiry is; *"Is this*

possible?" if so, *"Would the consideration of this proposition necessitate adjustments to the current training approach?"; "Would it result in any negative consequence to the existing site management training provisions?; and, "Would any of the merits of the current training provisions be compromised to accommodate this proposition?"* The answers to these questions are the essential determinants to this proposition. This sub-hypothesis investigates the proposition that the contingent relationship between the holistic needs of site managers and best practice approach to the training process. Key to the enquiry is the validity of the relationship if the framework for training site managers is to be improved.

5.5.3 The Research Model

Conceiving the merits of a schematic illustration to order and simplify the conceptualisation of the research approach, the research hypotheses and the inter-relationships between them, and consistent with the views of Naoum (2002), Miller (1991) and Nachmias and Nachmias (1993), the working model for the research was developed and shown in Figure 5.5.3. The model reaffirms the discussions provided on the development of the hypotheses of the research to assist the conception of the inquiry in 5.3.3. It also provide to assist underline the inter-relationships between the hypotheses; the independent and dependent variables within each hypothesis; and the underpinning propositions to achieve the aim and objectives of the research.

5.6 DATA COLLECTION

As part of the approach to observe the internal validity of the research, the influence of the research method to determine the data collection techniques was seriously considered. In comprehension of the nature and size of data to be collected where

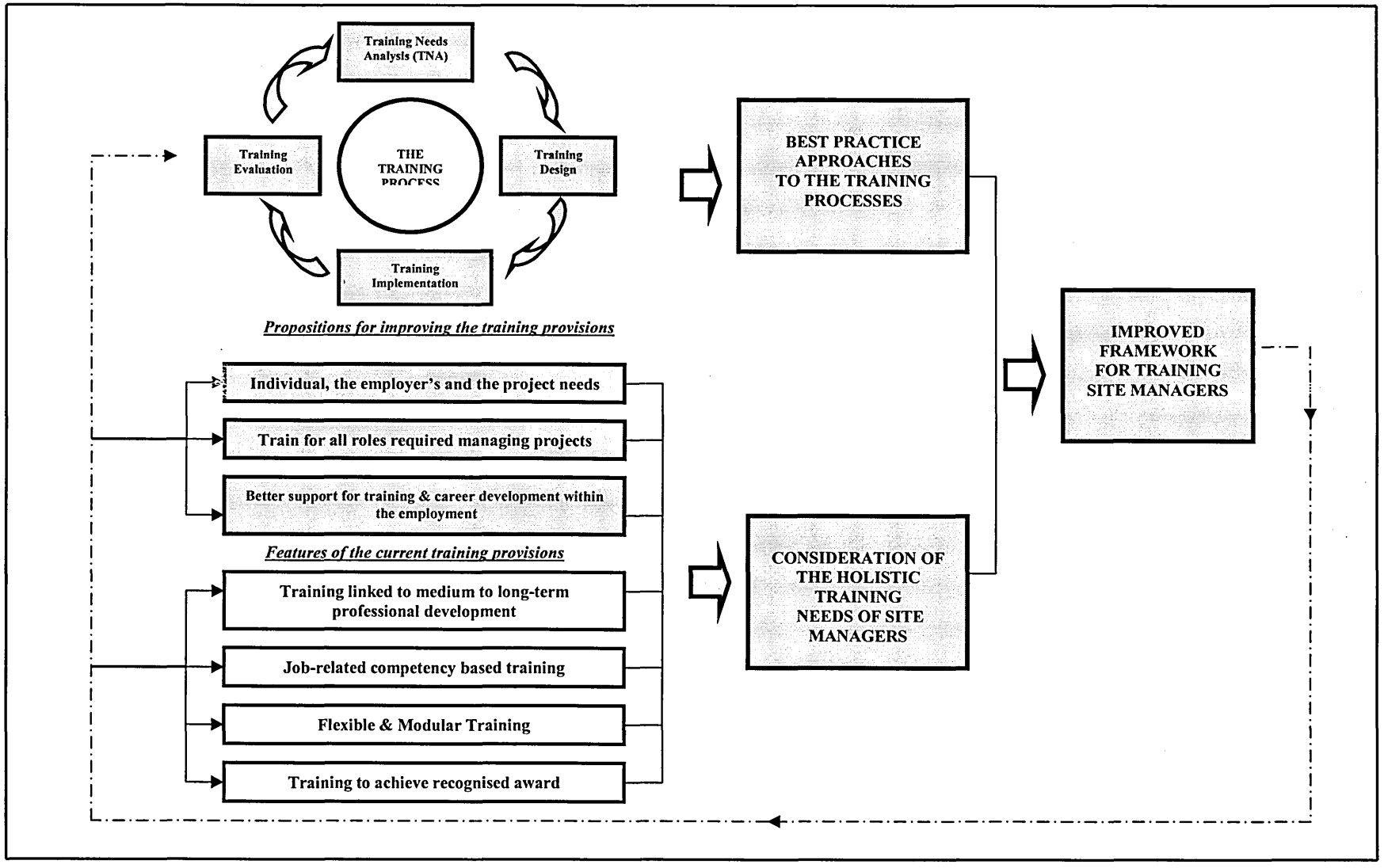

Fig. 5.5.3: The research model to establish the best practice framework for training site managers

generalised result was to be extracted form a large number of selected population sample especially for Hypothesis 1 and 2, and to measure the relationships between the variables within the research hypotheses, various data gathering methods were investigated.

Views from scholars on research were drawn to assist identify the most appropriate method for collecting data for the research. The importance of observing the contingent relationship between the research investigation to the type of data/information that are required and available (Naoum, 2002; Babbi, 1995), and the advantage of the 'cross-sectional' design of research methods to measure relationships between and among variables (Robson, 2002) were noted. The factors that determine the approach appropriate for making descriptive studies of large population (Babbi, 1995) and the advantage of 'triangulation' in annul out weakness within data collected in the qualitative and quantitative research methods were also observed (Miller and Brewer, 2003).

Drawing from the above and the need to gather feedback from the vast array of respondents related to site management training for this research, survey method was preferred. Structured questionnaire surveys were chosen for Hypothesis 1 and 2 and semi-structured interviews were selected for Hypothesis 3. Notwithstanding the critics that argue that survey research just look at particular aspects of people's belief and actions neglecting the role of human consciousness; is equated with a sterile, ritualistic and rigid model of science centered around hypothesis testing and significance test; and is merely a collection of facts and statistics (De Vaus, 1994), the choice for the survey was drawn for its advantage it offers over other research methods.

Scholars on research; McNeill (1990) and DeVaus (1994) emphasise that this method is the most appropriate method for obtaining a large amount of data and it permits analysis in statistical form within a relatively short period of time. Babbie (1995) adds that survey research is deterministic where it permits a clear and rigorous elaboration of a logical model. It clarifies the deterministic system of cause and effect of the research, and in general is suitable for understanding a larger sample under study, and is parsimonious i.e., good in carefully examining the relative importance of each variable studied by the research. The large number of variables within the targeted respondents and where multivariate analysis will be required to describe the characteristics of the propositions will be facilitated by the survey method when standardised question for large group of population can be administered. For Hypothesis 1 and 2, the large data to be sought from a large number of site managers, senior managers and training organisations/colleges will benefit from this.

The provision to allow the search for descriptive answers to such questions as, *"How?"*, *"Who?"*, *"What?"*, *"Where?"* and *"When?"* in descriptive surveys (Naoum, 2002); the benefits of 'coding' to explain behavior within pre-established categories 'themes' whilst allowing variations within the answers with open-ended questions as suggested by Alder and Alder (in Denzin and Lincoln, 1998) and Mason (1997); and the facility to collect meaningful, in-depth and rich data important to explain and substantiate the phenomenon investigated by providing a greater breadth of investigation that enables analytical enquiry to establish relationships or associations between attributes/objects (Kvale, 1996; Babbie, 1998; Foddy, 1994), underpins the selection of semi-structured interview method for Hypothesis 3. The detailed discussion on this follows in Chapter Seven.

5.7 PILOT STUDY

In maintaining the strict protocol to eliminate any potential flaws and shortcomings of the chosen designed methods and research instrument, and to authenticate the relevance and practicability of the approaches chosen (Blaxter *et al*, 1996; Cassell and Symon, 1994; Robson, 2002), pilot studies were carried out for the research. This involves trial runs undertaken on a small-scale investigation to assist refine data and procedures to allow the research to focus on particular areas that have been unclear previously, to test some questions and develop understanding with the participants to shape the final study.

(For the purpose of maintaining the flow of discussions, the pilot study undertaken for Hypothesis 1 and 2 is discussed within this chapter whilst the discussions on the pilot study for Hypothesis 3 are discussed in Chapter Seven).

It was drawn from the literatures researched (Naoum, 2002; Rossman and Rallis, 1998; Babbie, 1995; Nachmias and Nachmias; 1992; Maxim, 1999) that there is no fixed criterion for the selection of a pilot. As part of the strategy observed to pilot the research, a dress rehearsal of the research questionnaire survey was carefully carried out first for Hypothesis 1 & 2. The structure for the proposed investigations was drawn by connecting the research hypothesis and sub-hypotheses with the different data sought from the variables within and between the respondents, and against the relevant statistical test to be used to validate the test results from the analyses. This was summarised as shown in Appendix A.

The approach to develop the survey questionnaires through ensuring their accurate focus, brevity and clarity to construct effective questions as suggested by Alreck and

Settle (1995) was observed. The assistance of four key groups of people was obtained to assist the pilot study. The first was a group was academicians which comprised of a university professor, two associate professors and a senior academic in the field of education and training. The second party comprised of two site managers, two senior construction managers and a CIOB and NVQ/SVQ site management Level 3 and 4 SS/SM trainer. Three fellow researchers who have recently completed their data collection for their PhD research made up the third group and two support staff at Sheffield Hallam University formed the fourth group.

Each party was given a copy of the draft research questionnaire and was requested to provide their feedback and comments on the questionnaire itself. The first party i.e., the academics, were also interviewed to discuss their comments on the structure of the pilot study as well as the draft research questionnaire. As suggested by Naoum (2002), the key elements, sought from the feedback were:

(i) the length of time it took to complete the questionnaire;

(ii) clarity of the instructions;

(iii) unclear or ambiguous questions;

(iv) any objections to answering any of the questions;

(v) has there been any omission of any major topic;

(vi) the appropriateness of the layout; and

(vii) other comments

Feedback obtained from the pilot study was examined and considered. There were generally little comments on the structure of the enquiry. The key comments made includes the need for the research to reconsider the application of some terms and phrases which they felt could pose difficulty for the respondents to answer, and that it

took too long to complete the questionnaires. The researcher was also reminded of need to seriously consider the setting within which respondent site managers and senior managers would be attempting to respond to the questionnaires i.e., the project site environment (noise, little time, from the site office, etc.) which could pose difficulty in getting their participation

Each of the comments was carefully considered for refining the questionnaire design to derive at the final questionnaire for the data collection. In contending with the potential difficulty of reaching site managers and senior managers in construction, it was decided that the questionnaire survey will be conducted using the internet and postal questionnaires. Where possible, the researcher would personally approach respondent site managers and senior managers for their participation from construction project sites around the South Yorkshire area. Assistance would also be sought from various parties from within the industry to assist get the participation of respondents sought by the research. The final postal questionnaires for the research are shown in Appendix B1-3 whilst the internet version of the survey questionnaire is shown in Appendix C1-4 respectively.

5.8 CHAPTER SUMMARY

This chapter has presented the approach to conceptualise the literature framework and operationalise the research. The critical discussions on the definitions and concepts of the research study leading to the identification of the research problem and research question were clearly presented. The hypotheses and sub-hypotheses developed for the empirical investigations were determined with the dependent variables and the

independent variables clearly highlighted. The rationale for the survey approach to the data collection and the pilot study undertaken was also discussed.

Chapter Six follows with the presentation of the discussions on the collection, analysis and findings of quantitative data for Hypothesis 1 and 2, and Chapter Seven presents the discussions on the qualitative data collection, analysis and findings for Hypothesis Three.

CHAPTER SIX
Quantitative Data Collection, Analysis and Findings

6.1 INTRODUCTION

This is the first stage of the data analysis. This chapter presents the discussions on the data collection and analysis carried out for the site management training provisions offered by the CIOB C/DSM and NVQ/SVQ SS/SM training. The aim of the analyses was to test the proposition that the training provisions will improve with:

i. better understanding of the holistic training needs of site managers (Hypothesis 1), and

ii. adoption of best practice approaches into its training processes (Hypothesis 2).

The procedure of analysing the data following the findings of the preceding sub-hypothesis was maintained whenever possible. This was in consideration of the inter-relatedness of some of the sub-hypotheses and to enable the continuing analysis of certain findings. The process of extrapolating data from the survey questionnaires, the IT software used and the processes carried out to enable the analysis while maintaining the validity and reliability of the approaches are critically discussed. The methods and the rationale on how and why data was sorted, re-coded and manipulated to obtain the results was also discussed together with the statistical tests administered to establish and validate the results.

The chapter concludes by underlining the findings from the research analysis, confirming the validity of Hypothesis 1 and 2, and highlighting the emergent positions for improving the training provisions to be carried forward for the investigations in Hypothesis 3.

6.2. APPROACH TO ANALYSE DATA

Data was sought from site managers, senior managers i.e., construction managers, project managers, contract managers etc. from construction organisations (hereinafter termed as 'senior managers') and training managers/trainers from training organisations/colleges (hereinafter termed as 'training organisations/colleges) providing the CIOB C/DSM and NVQ SS/SM training. Over 300 organisations were approached through telephone and invitation letters. Participation in the survey was greatly assisted by the management of four MCG construction organisations and three medium-sized construction firms in South Yorkshire and Manchester, who encouraged their site managers and senior managers to respond to the questionnaire survey. The Chartered Institute of Building (CIOB) and Association of Project Managers (APM) also assisted to promote the survey through their websites.

Literatures by Grooves *et al* (2004), Bickman and Rog (1998), Weisberg *et al* (1996), Alreck and Settle (1995), Wright (1997), Riley (1990) and Thiessen (1997) were the key references drawn to the structure of the analysis. In maintaining the internal validity and rigour of the analysis, provisions for reliability and validity checks were established. Throughout the process of the analysis, assistance was sought and obtained from the two colleagues to check the application of the SPSS software and the administration of the statistical procedures. One is a senior academic in the built environment and the other is a statistician; both are currently undertaking their PhD research at the University of Sheffield.

The first stage of the analysis involves observing, sorting and grouping the data. To enable this, all data obtained from the internet survey and postal questionnaires are transferred into a Microsoft Excel programme. During this process superfluous data

were sieved. Five data from the respondent site managers (two from the internet survey and three from the postal questionnaires) were rejected; two data from senior managers (from the postal questionnaires) and three data from training organisations/colleges (all from the internet survey) were rejected. In these cases, the respondents had either failed to complete the key questions to enable data to be classified into key variables or there were critical missing values within their data. The facility provided by the subscribed internet FreeOnLineSurveys programme for the internet survey facilitated this exercise as all the results were automatically converted into Microsoft Excel format. Data from the postal questionnaires were manually transferred into the Excel programme. 81 and 37 respondent site managers and senior managers respectively participated in the postal questionnaires while the rest, together with all the training organisations/colleges participated through the internet survey.

Double checking the data entry was carried out throughout the process to avoid any error during the transfer. A total of 232 'legitimate' results comprising of 116 site managers, 89 senior mangers and 27 training organisations/colleges were selected and transferred into the SPSS Version 12 software for the analysis. The detailed breakdown showing the composition of respondents as sorted according to the variables for the analysis is shown in Tables 6.2a-f. The figures in Table 6.2d showing the composition of trainees reflecting the composition of the trainees according to the size or construction organisations was confirmed with the data provided by the training providers (in Section 4.4.1, Chapter 4). Some of the data transferred for the SPSS analysis was grouped and re-coded. This was to ensure that the data was grouped into more identifiable groups or labels which Yusoff (1997), Bell (1993) and Behloul (1991) suggest would to facilitate the analysis. This was particularly useful to enable the hypothesis testing to be undertaken more accurately.

Respondent Types	No. of Respondents	Cumulative Percent
Site Managers	116	50%
Senior Managers	89	88%
Training Organisations/Colleges	27	100%
Total	232	

Table 6.2a: The survey respondents

CIOB C/DSM Training	No. of Respondents	Cumulative Percent
Site Manager	52	51%
Senior Managers	33	83%
Training Organisations/Colleges	17	100%
Total	102	

Table 6.2b: CIOB C/DSM training respondents

NVQ/SVQ Training	No. of Respondents	Cumulative Percent
Site Manager	33	46%
Senior Managers	29	86%
Training Organisations/Colleges	10	100%
Total	72	

Table 6.2c: NVQ/SVQ SM/SS training respondents

Size of Construction Firm	Site Managers	Senior Managers
Small	23	12
Medium	46	35
Large	47	42
Total	116	89

Table 6.2d: Breakdown of respondents based on size of firm

Types of projects undertaken	Site Managers	Senior Managers	Total
New building projects	20	10	30
Existing building projects	16	8	24
Non-building projects	0	5	5
Any combination of the above projects	80	66	146
Total	116	89	205

Table 6.2e: Breakdown of respondent types based on types of project undertaken

Site Managers Career Progression Path	No of Respondents	Cumulative Percent
Craft	52	45%
Academic	32	73%
Both	32	100%
Total	116	

Table 6.2f: Breakdown of respondent site managers based on their career progression paths

Once the data was ready, a detailed analysis was carried out. Descriptive and inferential statistical test procedures administered for the analyses were drawn from Williams (1992), Thiessen (1990) and Wright (1997), and the application of the SPSS analysis were guided by George and Mallery (2000), Bryman and Cramer (1999), and Antonius (2003). Bivariate, multivariate and correlation analysis were widely used throughout. The statistical tests selected for the analyses were as follows:

(i) Analysis of median

Analysis of median was chosen to draw inferential differences from the values measured. Median (*signified by* in the text*) was considered most appropriate for the analysis on the justification it into account 'skews' within the values (Schutt, 1996; Bryne, 2002; Blaikie, 2003), and as such, would provide more accurate values for the analysis in contrast to means.

Because of the ordinal nature of the measurements, care was taken to avoid comparing the actual quantitative difference between the units measured during the analysis.

(ii) Descriptive statistics

In some cases, measure of central tendency using the frequency analysis (Williams, 1992; Wright, 1997) was used to understand the pattern of responses within the results. Clustered bar charts were employed to summarise the data. This provided a basic understanding of the data and the relationships between the variables which were immensely important as it provided a reasoned perspective for the interpretation of the results. This further supports to aid the refinement and the specification of the analysis of data that followed.

(iii) Spearman non-parametric correlation coefficient analysis

This was administered to measure the strength of relationships between variables in view of the ordinal nature of the measurements. Drawing from Wright (1997) who suggests that a 'one-way' correlation analysis between the dependent variable and the independent variable would be appropriate for the analysis as sought by research, the one-tail correlation coefficient analysis was selected. The standard international convention for accepting the level of confidence at 95% and a maximum value of 1.00 (perfect relationship) was taken to signify the maximum strength of association between variables (Thiessen, 1997, Riley, 1990, Litwin, 1995).

(iv) Analysis of Variance (ANOVA)

This was employed to compare the variance of mean values within the group results (Wright, 1997). It evaluates the extent of commonality or differences between the perceptions of the respondent groups (i.e., the site managers, senior managers and training organisations/colleges) in determining aggregate mean value. Measured over a value of 1.00, the smaller value suggested the stronger concordance (*signified by ** in the text*)

(v) Null-hypothesis testing using the Chi-square

This was undertaken to test the validity of the approaches propositioned within the hypotheses. The significance (alpha level) value of set at 0.05 i.e., the risk of rejecting a true null was taken at less than 5% (Riley, 1990; Wright, 1997).

6.3 ANALYSES AND FINDINGS

The analysis of data for Hypothesis 1 and Hypothesis 2 were undertaken by investigating the data from the sub-hypotheses expanded as follows:

6.3.1 Analysis of Sub-Hypothesis 1A:

"Consideration for meeting the collective needs of the site managers, their employers and their project's will improve the training provisions"

Data to determine the holistic training needs of the site managers, and the roles and tasks performed by site managers, were first analysed.

6.3.1.1 The site managers' holistic training needs

The ranking of the importance between the training needs was investigated by comparing the 'aggregate' median values for each training need.

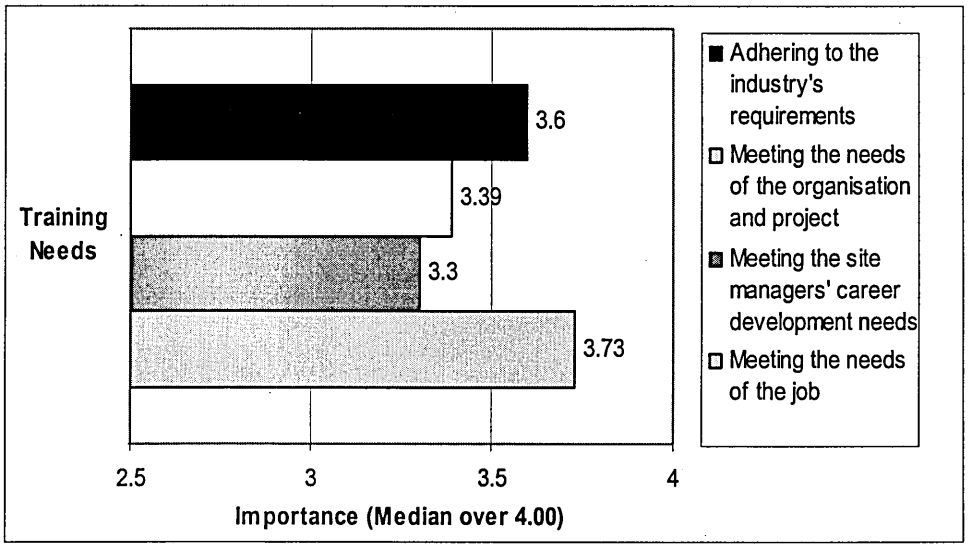

Fig. 6.3.1.1a: Importance of each training need

	Meeting the site managers' job needs	Meeting the site managers' career development needs	Meeting the needs of the organisation and project	Adhering to the industry's requirements
N	232	232	232	232
Median	3.73	3.30	3.39	3.60
ANOVA (sig)	0.09	0.38	0.36	0.13

Table 6.3.1.1a: Importance of each training need (Median and ANOVA test results)

It emerged that (see Table 6.3.1.1a, Figure 6.3.1.1a) the importance of site managers training (set against a maximum value of 4.00*) was perceived (in descending order) as follows:

(i) Meeting the site managers' job needs (3.73*, 0.09**)

(ii) Adhering to the industry's requirements (3.60*, 0.13**)

(iii) Meeting the needs of the organisation and project (3.39*, 0.36**)

(iv) Meeting the site managers' training and career development needs (3.30*, 0.38**)

The ANOVA test carried out found the difference in the mean value for the importance of training in *meeting the site managers' career development needs* (0.38**) and *meeting the needs of the organisation and project* (0.36**) moderately significant but the other results all registered very small values (< 0.15**). This infers strong agreement between site managers, senior managers and training/course providers on the importance for *training in meeting the site managers' job needs* and *adhering to the industry's requirements*.

To provide a better perspective of the nature of the differences between the perceptions of the respondent groups as noted from the ANOVA analysis, data was manipulated and frequency analysis was administered (see Figures 6.3.1.2b-e).

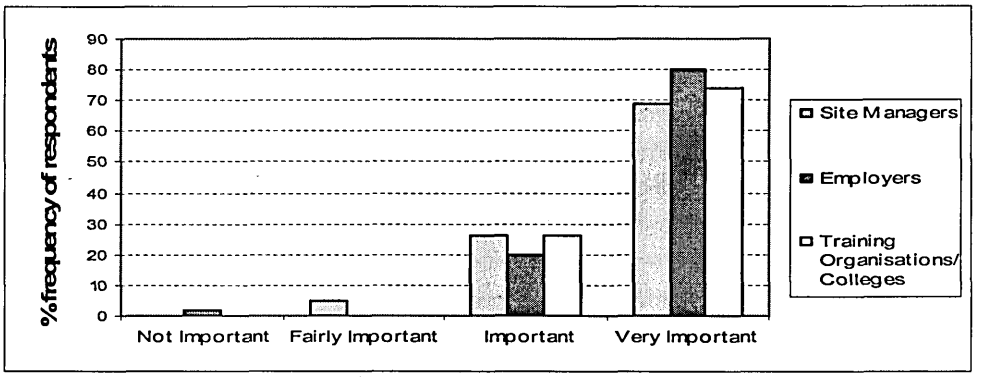

Figure 6.3.1.1b: Importance of training in meeting the site managers' job needs

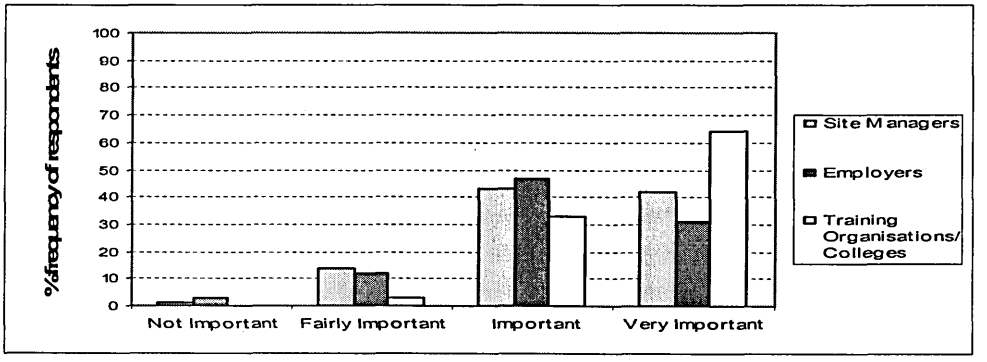

Figure 6.3.1.1c: Importance of training in meeting the site managers' career development needs

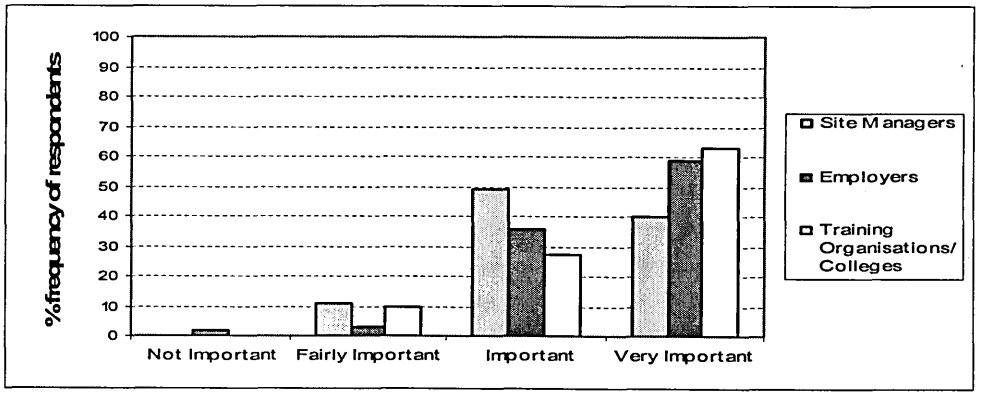

Figure 6.3.1.1d: Importance of training in meeting the organisation and project needs

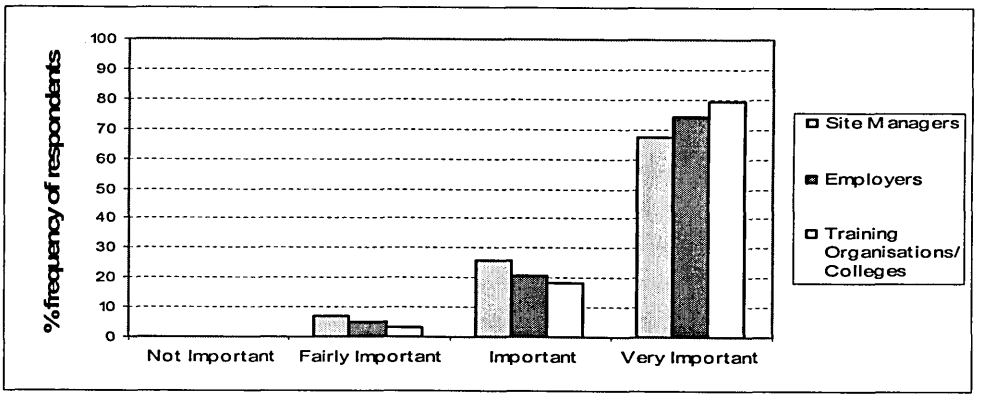

Figure 6.3.1.1e: Importance of training in adhering to the industry's requirements

Variables		Meeting the site managers' job needs	Meeting the site managers' career development needs	Meeting the organisation & project needs	Adhering to the industry's requirements
(i) Size of firm	Correlation Coefficient	0.06	0.24	0.14	0.10
	N	205	205	205	205
(ii) Types of projects undertaken	Correlation Coefficient	0.12	-.004	0.06	0.05
	N	205	205	205	205
(iii) Experience in Site Mgt.	Correlation Coefficient	0.11	-0.21	-0.05	0.02
	N	116	116	116	116
(iv) Career Progression Path into Site Management	Correlation Coefficient	0.04	0.33	0.03	0.07
	N	116	116	116	116

Table 6.3.1.1b: Influence of variables on the site managers' training needs (Spearman correlation coefficient test results)

It emerged that training organisations/colleges tend to consider training very important in meeting all the training needs. With the exception of the importance of training in *meeting the site managers' job needs and adhering to the industry's requirements* where there was a strong common agreement, there were noticeable differences in perception between the respondent groups. *Training to meet the site managers' career development needs* was almost equally rated as "important" and "very important" by site managers and senior managers. More site managers rated training *to meet the needs of the organisation and project* as "important" in contrast to more senior managers who deem that training to meet this need is "very important".

The Spearman coefficient correlation test (see Table 6.3.1.2b) administered found that there was some significant but weak positive correlation between:

(i) size of the construction organisation with *meeting the site managers' training and career development needs* (0.24) and *meeting the needs of the organisation and project* (0.14);

(ii) types of construction project undertaken with *meeting the site managers' job needs* (0.12); and

(iii) site manager's career progression paths with *meeting the site managers' career development needs* (0.33)

Weak significant negative correlation was also identified between:

(i) types of project undertaken with *meeting the site managers' career development needs* (-0.04); and

(ii) site managers' experience in site management with *meeting the site managers' career development needs* (-0.12) and *meeting the organisation and the project needs* (-0.05).

Whilst the results infer that there were some 'weak' relationships between some of the variables and the site managers' training needs, their low values were conceived not significant enough to influence the overall results. It was therefore deduced that these variables does not have much significant impact on the site managers' training needs.

6.3.1.2 The roles and tasks of site managers

The importance of the roles and tasks of site managers were next analysed. This was to establish the frame of reference for the investigations on the knowledge and skills provided by the training provisions. Similar test procedures were administered.

The results from the analysis of median (see Figures 6.3.1.2a-d and Table 6.3.2.1a) reveal that all the roles and tasks of the site manager were considered important with most of the results registering values above 3.00* (measured over 4.00*). Survey works

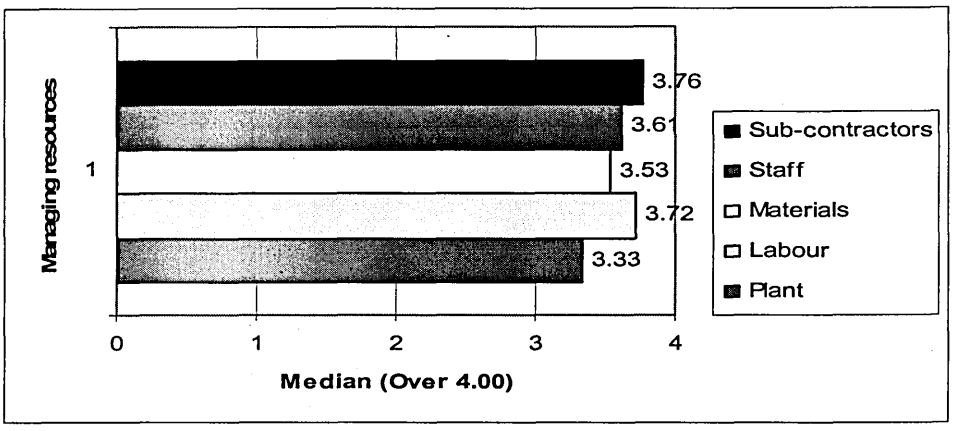

Figure 6.3.1.2a: Importance of managing resources

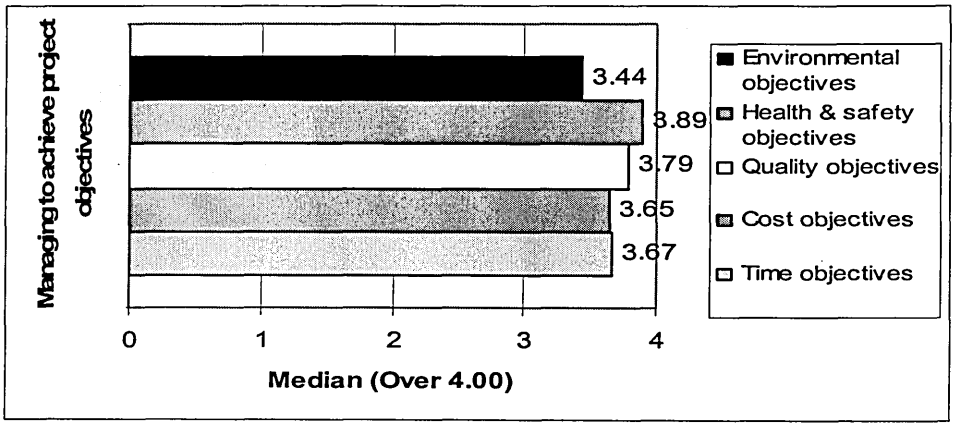

Figure 6.3.1.2b: Importance of managing to achieve project objectives

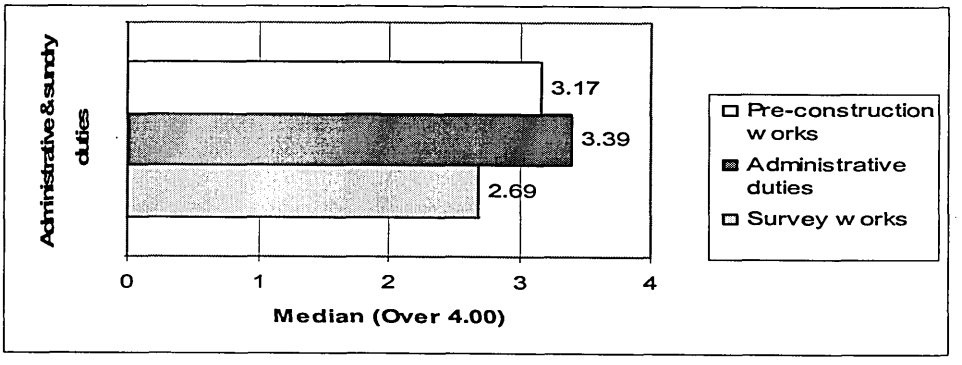

Figure 6.3.1.2c: Importance of administrative and sundry duties

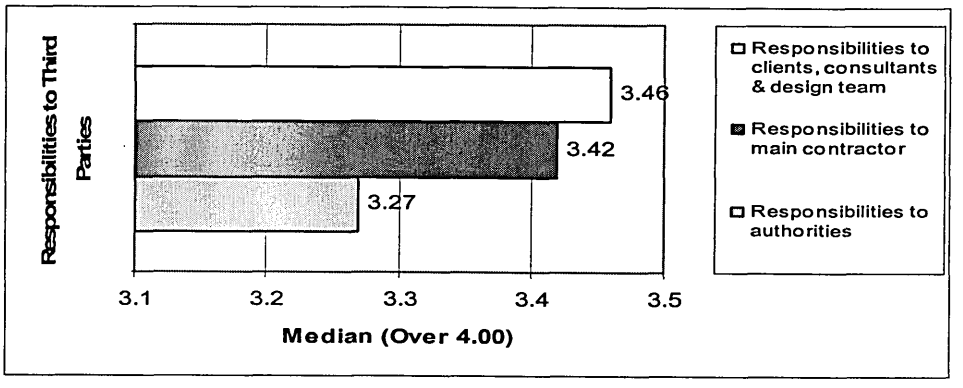

Figure 6.3.1.2d: Importance of responsibilities to Third Parties

Respondent Types		Managing resources					Managing to achieve project objectives					Administration & Sundry Duties			Responsibilities to Third Parties		
		Plant	Labour	Materials	Staff	Sub-Con.	Time	Cost	Quality	Health & Safety	Environ-ment	Survey works	Admin. duties	Pre-constr. works	Authorit-ies	Main Contrac-tor	Clients, Consultants & Design Team
Site Manager	Median	3.34	3.74	3.54	3.56	3.73	3.61	3.58	3.74	3.87	3.34	2.87	3.30	3.05	3.21	3.42	3.40
	N	116	116	116	116	116	116	116	116	116	116	116	116	116	116	116	116
Senior Managers	Median	3.24	3.70	3.50	3.63	3.76	3.69	3.67	3.83	3.90	3.51	2.53	3.47	3.29	3.40	3.36	3.56
	N	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Training Org/Colleges	Median	3.37	3.74	3.59	3.78	3.81	3.85	3.85	3.89	3.96	3.70	2.44	3.48	3.30	3.11	3.59	3.37
	N	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
Total	Median	3.33	3.72	3.53	3.61	3.76	3.67	3.65	3.79	3.89	3.44	2.69	3.39	3.17	3.27	3.42	3.46
	N	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232
ANOVA (sig.)		0.33	0.80	0.74	0.22	0.72	0.08	0.05	0.15	0.37	0.01	.01	.01	0.06	0.04	0.27	0.12

Table 6.3.1.2a: Importance of site managers' roles and tasks (Median and ANOVA test results)

Variables		Managing resources					Managing to achieve project objectives					Administration & Sundry Duties			Responsibilities to Third Parties		
		Plant	Labour	Materials	Staff	Sub-Con.	Time	Cost	Quality	Health & Safety	Environ-ment	Survey works	Admin. duties	Pre-constr. works	Authorit-ies	Main Contrac-tor	Clients, Consultants & Design Team
Size of firm	Corr. Coeff.	-0.06	-0.15	-0.16	0.05	0.05	0.07	0.10	-0.02	0.08	0.19	-0.05	0.10	0.31	0.09	0.01	0.04
	N	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205
Type of projects undertaken	Corr. Coeff.	0.07	-0.02	-0.01	0.05	0.03	0.09	0.10	0.08	0.05	0.05	0.14	0.06	0.07	0.08	-0.01	0.13
	N	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205	205

Table 6.3.1.2b: Influence of variables on the site managers' roles and tasks (Spearman correlation coefficient test results)

were considered least important to infer that site managers are least expected to undertake this task in their job.

Most of the results from the Spearman correlation coefficient tests (see Table 6.3.1.2b) registered very low values (<0.10 or <-0.10) but there were some very low values (<0.10 or <-0.10).

There were some noticeable weak relationships between:

(i) the size of the construction organisation with the importance of *managing labour* (-0.15) and *materials* (-0.16), managing project *'environment objectives'* (0.19) and *pre-construction works* (0.31); and

(ii) the type of construction project undertaken with the importance of *survey works* (0.14) and *responsibilities to the clients, consultants and the design team* (0.13).

Notwithstanding, the small values suggest that these variables does not have considerable influence on the significance of these roles and tasks when considering them in the context of the site managers job within the industry as a whole.

With the exception of the *importance of managing labour* (0.80 **), *materials* (0.74 **) and *sub-contractors* (0.72 **), 'moderately low' ANOVA values were recorded for the *managing plant* (0.33**), *staff* (0.22**) and *responsibilities to clients, consultants and design team* (0.12**). All the other ANOVA test result registered very low values (<0.10**). This reflects the strong agreement between the site managers, senior managers and training organisations/colleges in determining the values.

6.3.1.3 Effectiveness of the current training provisions in meeting the site managers' training needs

The composition of the responses for the survey questions for the two training were tabulated and presented in Figures 6.3.1.3a & b.

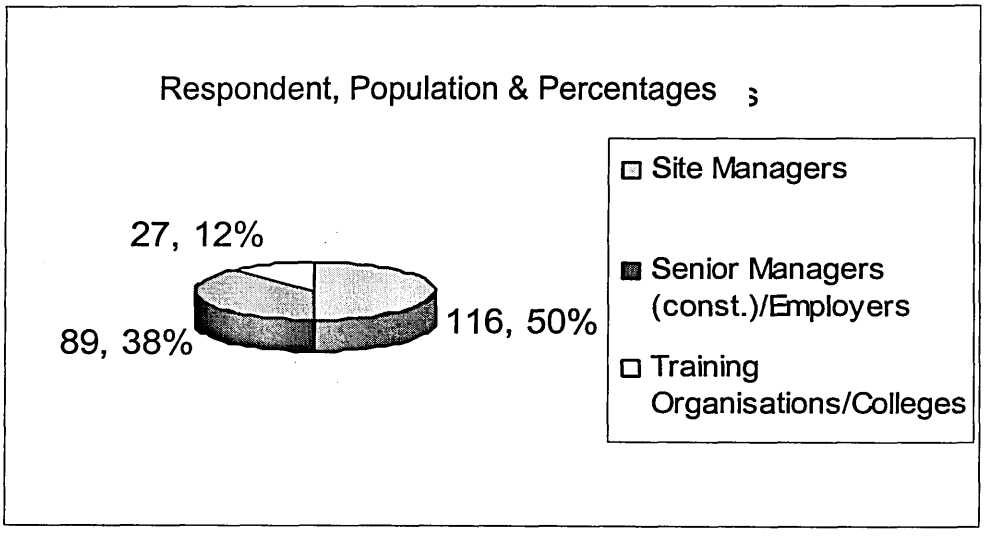

Figure 6.3.1.3a: CIOB C/DSM training respondents

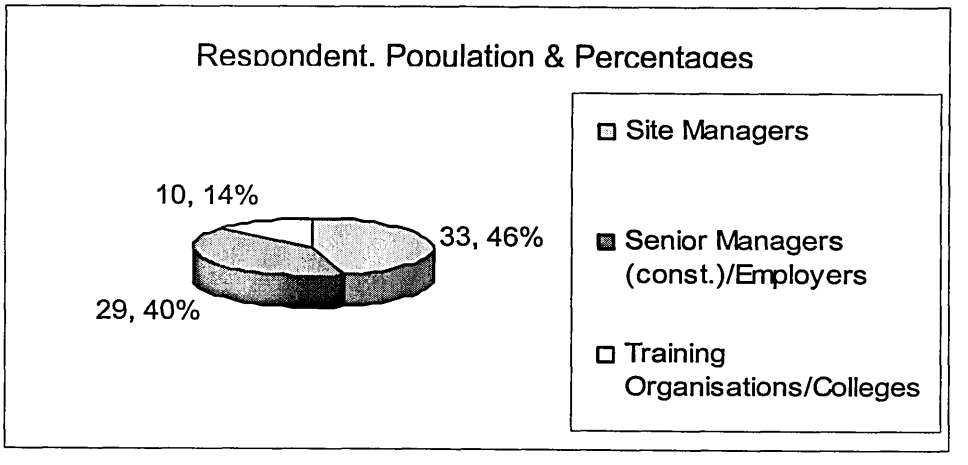

Figure 6.3.1.3b: NVQ/SVQ SS/SM training respondents

A total of 102 CIOB C/DSM training respondents participated in questionnaire survey which was comprised of 52 site managers or 51% of the respondents, 33 senior managers or 32% of the respondents and 17 training/course providers or 17% of the respondents. 72 respondents participated in NVQ/SVQ SS/SM training questionnaire.

This comprised of 33 site managers or 46% of the respondents, 29 senior managers or 40% of the respondents and 10 trainers/training managers from training organisations/colleges or 14% of the respondents.

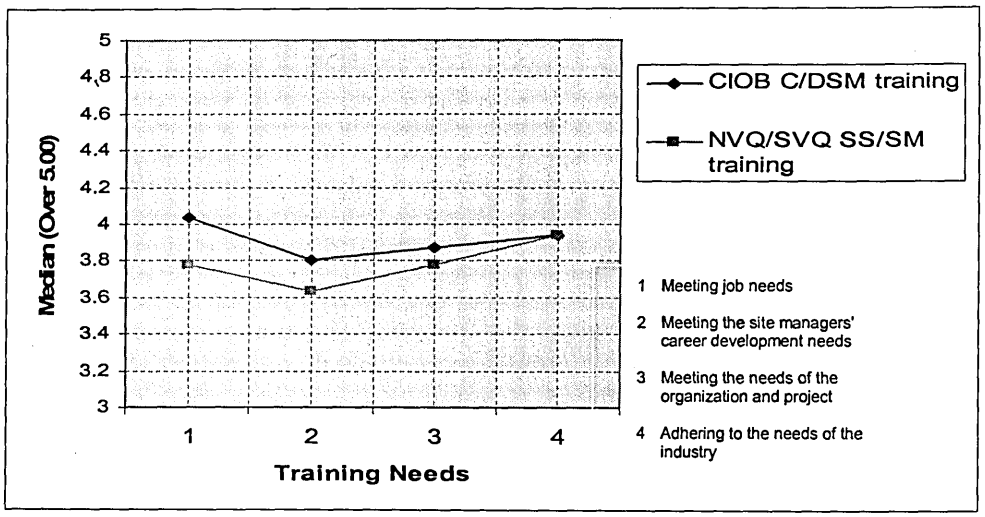

Fig. 6.3.1.3c: Effectiveness of the CIOB C/DSM and NVQ/SVQ SS/SM training provisions in meeting site managers' training needs

A 'snapshot' analysis to estimate the effectiveness of the two training schemes (measured over 5.00*) was carried out through the analysis of median. The results (see Figure 6.3.1.3c, Tables 6.3.1.4b and 6.3.1.5b) suggest that the CIOB C/DSM training was perceived more effective.

The validity of the proposition within the sub-hypothesis for the CIOB C/DSM and the NVQ/SVQ training were both tested. The findings are as follows:

6.3.1.4 CIOB C/DSM training

Null-hypothesis: "The current CIOB C/DSM training provisions have been ineffective in meeting the site managers' training needs".

CIOB C/DSM training	Meeting job needs	Meeting the site managers' career development needs	Meeting the needs of the organization and project	Adhering to the industry's requirements
Asymp. Sig.	0.00	0.00	0.00	0.00

Table 6.3.1.4a: Meeting the training needs (Null-hypothesis test results for CIOB C/DSM training)

Result for the Chi-square test (see Table 6.3.1.4a) suggests the entire null hypothesis can be rejected. This validates that the training has been effective in meeting the site managers training, albeit at different effectiveness levels.

CIOB C/DSM Respondents		Meeting job needs	Meeting career development needs	Fulfilling the organisation's needs	Adhering to the industry's requirements
Site managers	Median	4.17	3.98	4.04	4.08
	N	52	52	52	52
Senior managers	Median	3.85	3.51	3.70	3.76
	N	33	33	33	33
Training org./colleges	Median	3.95	3.82	3.71	3.88
	N	17	17	17	17
Total	Median	4.03	3.80	3.87	3.94
	N	102	102	102	102
ANOVA (sig)		0.07	0.02	0.10	0.10

Table 6.3.1.4b: Effectiveness of the CIOB C/DSM training in meeting the site managers' training needs (Median and ANOVA test results)

The ANOVA test results (See Table 6.3.1.4b) all registered low values (< 0.01 sig.) to infer the strong common perception between the respondent groups on the effectiveness of the training in meeting the training needs.

6.3.1.5 NVQ/SVQ SS/SM training

Null-hypothesis: "The current NVQ/SVQ SS/SM training provisions have been ineffective in meeting the site managers' training needs".

NVQ/SVQ SS/SM Training	Meeting job needs	Meeting career development needs	Fulfilling the organisation's needs	Adhering to the industry's requirements
Asymp. Sig.	0.01	0.48	0.00	0.00

Table 6.3.1.5a: Meeting the training needs (Null-hypothesis test results for NVQ/SVQ SS/SM training)

With the exception of *effectiveness of training in meeting the site managers' career development needs* (0.48 sig.), the Chi-square test (see Tables 6.3.1.5a) results registered values for all the other null-hypothesis to be rejected. This infers that the training has been effective in meeting all the other training needs except for *meeting the site managers' career development needs.*

NVQ/SVQ SS/SM Respondents		Meeting job needs	Meeting career development needs	Fulfilling the organisation's needs	Adhering to the industry's requirements
Site managers	Median	3.48	3.24	3.55	3.73
	N	33	33	33	33
Senior managers	Median	4.10	3.93	4.10	4.17
	N	29	29	29	29
Training org./colleges	Median	3.80	4.00	3.60	4.00
	N	10	10	10	10
Total	Median	3.78	3.63	3.78	3.94
	N	72	72	72	72
ANOVA (sig)		0.00	0.00	0.00	0.04

Table 6.3.1.5b: Effectiveness of the NVQ/SVQ SS/SM training in meeting the site managers' training needs (Median and ANOVA test results)

The ANOVA test results (see Table 6.3.1.5b) for all the propositions within this sub-hypothesis registered very small values to suggesting strong concordance within the mean values. This infers the common perception between the respondent groups when conceiving the values.

6.3.1.6 Findings drawn form the analyses

- Within the context of training best practice underlined by the research i.e., the importance of the training to: (i) to meet the site managers' job needs, (ii) meeting the site managers training and career development needs; (iii) meeting

the needs of the organisation and project, and; (iv) adhering to the requirements of the industry, it emerged that in the main, the site managers have training needs which are common.

- Neither the size of the construction organisation, type of construction project, the experience of site managers or their career progression paths have much significant impact on these training needs. This tends to support the view that generic training programmes, if effectively designed, can meet the site managers training needs for the whole industry.

- Site managers are generally expected to undertake a range of common site management roles and tasks within their job, and much of their job centres on:
    i. managing project resources
    ii. the achievement of project objectives
    iii. administrative and sundry duties, and
    iv. responsibilities to Third Parties.

- This also further support the view that site managers tend to spend most of their time on traditional management functions such as planning, co-coordinating, monitoring, controlling, managing conflict etc., and in undertaking these activities, people management skills such as such as communicating, motivating, training and networking etc, are very important. This is regardless of the size of the construction organisation or the type of construction project that they undertake.

- Whilst this infers that there has been little change in the structure of the site managers' site manager's job, it propounds the view that any provisions for their training in meeting their current job needs must focus on these roles and tasks.

- *Meeting the site managers' job needs* was perceived as the most important training objective. This is followed by the importance of *adhering to the industry's requirements*, *meeting the site managers' career development needs* and *meeting the needs of the organisation.* By the nature of the results, it was conceived that training must consider meeting these needs holistically to be more effective.

- Both the provisions offered by the CIOB C/DSM and the NVQ/SVQ SS/SM training schemes are relatively effective in meeting the site managers' training needs at the current NVQ Level 3 and 4 levels. The incidence of the 'gap' between the median scores and the maximum possible median values set (at 5.00*) infers further room for improving the training effectiveness.

- The finding that the NVQ/SVQ SS/SM training has not been effective in meeting the site managers' career development propounds the need to review the approach in determining meeting this need. This was investigated in 6.4 together with the CIOB C/DSM training.

- The incidence of the differences in determining the level of training effectiveness between the respondent groups for both the CIOB C/DSM and NVQ/SVQ SS/SM were noted. This was monitored together with the findings

from the preceding analysis of the other sub-hypothesis before any conclusions were drawn.

Further in-depth investigation on possible best practice approaches for enhancing training effectiveness in meeting the other site managers' training needs were carried out in Hypothesis 2. Sub-hypothesis 1B continues to investigate the approaches for improving the training provisions in *meeting the site managers' career development needs.*

6.3.2 Analysis of Sub-Hypothesis 1B:

"The training provisions will improve with training that better support the site managers' career development needs"

6.3.2.1 The importance of training to support for the site managers' career development needs

Subsequent to the finding in sub-hypothesis 1A which identifies the need for training to be supported with better career development provisions to be more effective, this sub-hypothesis investigates the propositions on how this could be achieved. To initiate the analysis, the propositions within the sub-hypothesis were classified into groups of;

(i) support for continuing professional development

(ii) support from the employment, and

(iii) support for training at the industry level

The respondent group's perceptions on the importance of the various approaches to improve the training effectiveness were analysed. The results (See Table 6.3.2.1a)

posted positive median scores to suggest that all the approaches were perceived significant for improving the effectiveness of training in meeting this need.

With some variations within the results (set over 4.00*), support for training at the industry level (range 2.89* – 3.18*) was perceived most important, followed by support for professional development (range 2.78* – 3.12*) and support from the employment (range 2.23* – 3.03*). The ranking of the importance of the approaches was as follows:

A. Support for professional development:

1. Continuing education/CPD (3.12*, 0.09**)
2. Professional memberships (2.78*, 0.05**)

B. Support for training at the industry level:

1. Make the training a minimum requirement of staff development programme (3.18*, 0.04**)
2. Compulsory training/year (2.89*, 0.05**)

C. Support by the employer:

1. Paid leave to attend training (3.05*, 0.01**)
2. Allowance to attend training (3.03*, 0.07**)
3. Logistic support for training (3.00*, 0.00**)
4. Support for continuing education/training (2.94*, 0.02**)
5. Job enrichment (2.90*, 0.62**)
6. Sponsorship for training (2.82*, 0.00**)
7. Payment of professional fees (2.69*, 0.01**)
8. Pay increase upon completion of training (2.48*, 0.00**)
9. Promotion upon completing the training (2.32*, 0.00**)

Training Respondents		Support for training at the industry level		Support from the employer										Support for professional development	
		Make training a minimum requirement of for staff develop. programme.	Compu-lsory training days per year	Allowance for training	Logistic support for training	Paid leave	Sponsor-ship of training	Promotion upon completion of training	Job enrich-ment	Pay increase upon comple-tion of training	Bonus for passing training	Support for cont. education or training	Payment of prof. fees	Support for prof. memb-ership	Support for cont. education/ CPD
Site managers	Median	3.27	3.03	3.13	3.07	3.18	2.91	2.46	2.92	2.68	2.35	3.02	2.84	2.89	3.1379
	N	116	116	116	116	116	116	116	116	116	116	116	116	116	116
Senior managers	Median	3.18	2.79	2.85	2.79	2.84	2.54	2.12	2.84	2.23	2.00	2.75	2.51	2.56	3.02
	N	89	89	89	89	89	89	89	89	89	89	89	89	89	89
Training org/colleges	Median	2.82	2.63	3.19	3.37	3.15	3.33	2.41	2.96	2.48	2.44	3.22	2.67	3.00	3.41
	N	27	27	27	27	27	27	27	27	27	27	27	27	27	27
Total	Median	3.18	2.89	3.03	3.00	3.05	2.82	2.32	2.90	2.48	2.23	2.94	2.69	2.78	3.12
	N	232	232	232	232	232	232	232	232	232	232	232	232	232	232
ANOVA (sig)		0.04	0.05	0.07	0.00	0.01	0.00	0.00	0.62	0.00	0.03	0.02	0.01	0.05	0.09

Table 6.3.2.1a: Importance of support to improve training effectiveness in meeting the site managers' career development needs (Median and ANOVA test results)

Variables	Support for training at the industry level		Support from the employer										Support for professional development	
	Compu-lsory training days/year	Make training a must for staff develop programme.	Allowance for training	Logistic support for training	Paid leave	Sponsorship of training	Promotion upon completion of training	Job enrich-ment	Pay increase upon completion of training	Bonus for passing training	Support for cont. education or training	Payment of prof. fees	Support for prof. memb-ership	Support for cont. education/ CPD
Size of Firm:														
N	232	232	232	232	232	232	232	232	232	232	232	232	232	232
Sig. (1-tailed)	0.00	0.00	0.04	0.00	0.12	0.00	0.02	0.39	0.19	0.11	0.00	0.03	0.12	0.00
Types of Project Undertaken														
N	205	205	205	205	205	205	205	205	205	205	205	205	205	205
Sig. (1-tailed)	0.04	0.03	0.02	0.49	0.11	0.39	0.06	0.08	0.50	0.00	0.08	0.03	0.41	0.43

Table 6.3.2.1b: Influence of variables on the site managers' career development needs (Spearman correlation coefficient)

10. Bonus for passing training (2.23*, 0.03**)

With the exception of the *importance of job enrichment* (0.62**) which registered 'average' ANOVA value, all other ANOVA test results (see Table 6.3.2.1b) registered very low values (< 0.10 sig.). This infers the strong common perception between the respondent groups' perception of the significance of these elements of support.

The Spearman correlation coefficient analysis (See Table 6.3.2.1b) registered moderately significant values for the correlation between:

(i) types of project undertaken with *support for professional membership* (0.41), *support for continuing education/CPD* (0.43) and *logistics support for training* (0.49); and

(ii) size of construction firm with *job enrichment* (0.39)

All other results from the analysis suggest that size and types of construction projects undertaken have little impact over the significance of the approaches for supporting the site managers' career development needs.

The importance of improving the current training provisions to be more effective in meeting the site managers' career development needs was next investigated. The validity and the importance of considering the propositions highlighted in the sub-hypothesis were investigated, null-hypothesis testing and statistical tests procedures were carried out.

The findings from the analysis of the CIOB C/DSM and the NVS SS/SM training provisions were as follows:

6.3.2.2 CIOB C/DSM training

Null-hypothesis: "The approaches propositioned are not significant for improving the effectiveness of the current CIOB C/DSM training in meeting the site managers' career development needs"

With the exception of *promotion* (0.55) and *pay increase following completion of the training* (0.69), Chi-square test results (See Table 6.3.2.1c) suggest values for all other null-hypotheses to be rejected. This infers that, apart from the two propositions, the rest of the provisions underlined by the sub-hypothesis are significant for improving the effectiveness of the training in meeting the need.

Analysis of median which (set over 4.00*) provided data (see Table 6.3.2.1d) that suggest that *making the training a minimum requirement for staff development programme* (3.26*) and provision for *compulsory training days/year* (2.89*) would be the significant approach at the industry level to support the training. *Support for continuing education/CPD* (3.19*) and *support for professional membership* (2.94) were the approaches to support the site managers' professional development whilst the provision for *allowance to attend training* (3.14*), *logistics support for training* (3.10*), *paid leave* (3.10*), *support for continuing education/training* (2.98*), *sponsorship for training* (2.90*), *job enrichment* (2.97*) and *payment of professional fees* (2.63*) were the significant approaches to support the site managers' career development by the employer.

The (ANOVA) test results registered very significant non-concordance values to infer the respondents group's very significant perception differences for *promotion upon*

CIOB C/DSM Training	Support for training at the industry level		Support from the employer										Support for professional development	
	Compu-lsory training days/year	Make training a must for staff develop. programme.	Paid leave	Sponsor-ship of training	Allowance for training	Logistic support for training	Promotion upon completion of training	Job enrichment	Pay increase upon completion of training	Bonus for passing training	Support for cont. education or training	Support for prof. membership	Payment of prof. fees	Support for cont. education/ CPD
Asymp. Sig.	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.69	0.00	0.00	0.00	0.01	0.00

Table 6.3.2.2a: Validity of importance of the propositions for improving the effectiveness of CIOB C/DSM training provisions in meeting the site managers' career development needs (Chi-square test results)

CIOB C/DSM Training Respondents		Support for training at the industry level		Support from the employer										Support for professional development	
		Compul-sory training days/year	Make training a must for staff development programme	Allowance for training	Logistic support for training	Paid leave	Sponsor-ship of training	Promotion upon completion of training	Job enrichment	Pay increase upon completion of training	Bonus for passing training	Support for cont. education or training	Payment of prof. fees	Support for professional membership	Support for conti. education/ CPD
Site managers	Median	3.06	3.25	3.23	3.12	3.06	2.91	2.42	2.98	2.63	2.17	3.00	2.87	2.77	3.12
	N	52	52	52	52	52	52	52	52	52	52	52	52	52	52
Senior managers	Median	2.70	3.27	2.90	2.97	3.09	2.73	2.37	3.00	2.21	1.64	2.82	2.33	2.55	3.12
	N	33	33	33	33	33	33	33	33	33	33	33	33	33	33
Training org./colleges	Median	2.77	3.00	3.29	3.29	3.24	3.24	2.41	2.88	2.59	2.47	3.24	2.53	2.94	3.53
	N	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Total	Median	2.89	3.26	3.14	3.10	3.10	2.90	2.40	2.97	2.49	2.05	2.98	2.64	2.94	3.19
	N	102	102	102	102	102	102	102	102	102	102	102	102	102	102
ANOVA (sig)		0.42	0.36	0.18	0.42	0.69	0.16	0.96	0.82	0.09	0.01	0.25	0.04	0.25	0.16

Table 6.3.2.2b: Significance of the propositions for improving the effectiveness of CIOB C/DSM training provisions in meeting the site managers' career development needs (Median and ANOVA test results)

completion of the training (0.96), *job enrichment* (0.82), and *paid leave to attend training* (0.69). Moderate significant values were registered for *compulsory training days/year* (0.42), *logistics support for training* (0.42) and *making training a minimum requirement of staff development programme* (0.36). Conversely, small values (< 0.25) suggesting strong concordance were registered for the other propositions.

6.3.2.3 NVQ/SVQ SS/SM training

Null-hypothesis: "The approaches propositioned are not significant for improving the effectiveness of the current NVQ/SVQ SS/SM training in meeting the site managers' career development needs"

Apart from *pay increase upon completion of training* (0.93) and *bonus for passing training* (0.89), the Chi-square test results (see Tables 6.3.2.3a) all registered values for the null hypotheses to be rejected, inferring that the other propositions within this sub-hypothesis are significant for improving the training effectiveness in meeting this need.

Analysis of the median (set over 4.00*) found that (see Table 6.3.2.3b) support for training at the industry level through the provision of *compulsory training days/year* (2.92*) and *making training a minimum requirement of staff development programme* (3.12*) very significant for supporting the training provisions at the industry level. *Support for continuing education/training* (3.08*), *paid leave* (3.06*), *logistics support* (3.04*), *allowance to attend raining* (3.00*), *sponsorship for training* (2.89*) and *job enrichment* (2.82*) were the more significant approaches for improving the support for site managers' career development needs by the employer. Support for professional development were through *continuing education/CPD* (3.21*) and *support for professional membership* (2.86*) were also significant.

NVQ/SVQ SS/SM training	Paid leave	Sponsor-ship of training	Allowance for training	Logistic support for training	Compulsory training days/year	Make training a must for staff develop. programme.	Promotion upon completion of training	Job enrichment	Pay increase upon completion of training	Bonus for passing training	Support for cont. education or training	Support for prof. membership	Payment of prof. fees	Importance of support for CPD
Asymp. Sig.	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.93	0.89	0.00	0.02	0.00	0.00

Table 6.3.2.3a: Validity of importance of the propositions for improving the effectiveness of NVQ/SVQ SS/SM training provisions in meeting the site managers' career development needs (Chi-square test results)

NVQ/SVQ SS/SM training		Support for training at the industry level		Support from within the employment										Support for professional development	
		Compulsory training days/year	Make training a must for staff development programme	Allowance for training	Logistic support for training	Paid leave	Sponsor-ship of training	Promotion upon completion of training	Job enrichment	Pay increase upon completion of training	Bonus for passing training	Support for cont. education or training	Payment of prof. fees	Support for prof. membership	Importance of support for CPD
Site managers	Median	3.06	3.30	3.09	3.03	3.24	3.00	2.48	2.88	2.70	2.52	3.15	3.06	3.12	3.33
	N	33	33	33	33	33	33	33	33	33	33	33	33	33	33
Senior managers	Median	2.93	3.14	2.90	2.90	2.86	2.55	2.10	2.66	2.35	2.38	2.97	2.52	2.48	3.07
	N	29	29	29	29	29	29	29	29	29	29	29	29	29	29
Training Org./Colleges	Median	2.40	2.50	3.00	3.50	3.00	3.50	2.40	3.10	2.30	2.40	3.20	2.90	3.10	3.20
	N	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total	Median	2.92	3.13	3.00	3.04	3.06	2.89	2.32	2.82	2.50	2.44	3.08	2.82	2.86	3.21
	N	72	72	72	72	72	72	72	72	72	72	72	72	72	72
ANIVA (sig)		0.17	0.36	0.73	0.08	0.25	0.03	0.27	0.18	0.26	0.87	0.58	0.10	0.01	0.42

Table 6.3.3.3b: Significance of the propositions for improving the effectiveness of NVQ/SVQ SS/SM training provisions in meeting the site managers' career development needs (Median and ANOVA test results)

The ANOVA test results infer that there were highly significant perception differences between the respondent groups in determining the importance of *bonus for passing the training* (0.87**) and *allowance for training* (0.73**). There were some moderate significant differences in their perceptions for the importance of *support for continuing education of training* (0.58**), *continuing education/CPD* (0.42**), *promotion* (0.27**) and *pay increase on completion of training* (0.26**), but they share a strong common perception of the importance for all the others (<0.20**).

6.3.2.4 Findings drawn from the analysis

- Improving the support for the site managers' professional development, training and from their employers are all significant if the training provisions are to be more effective in meeting the site managers' career development needs. The nature of the result also suggests that this needs to be a collective initiative.

- The strong perception of the importance of support for the site managers' career development in the form of continuing education, training and/or CPD signals the importance of provisions for continuous learning opportunities and for the achievement of professional status. This is an important cue that indicates the route for the improvements.

- With the exception of *pay increase upon completion of training* and *bonus for passing training* which cannot be considered for the NVQ/SVQ SS/SM training, all the other approaches propositioned would be significant for improving the training provisions in supporting the site managers' career development needs.

- Extrinsic rewards were the dominant elements for consideration but intrinsic rewards or incentives (drawing from their lower significant values) would assist to further enhance the effectiveness of the approaches.

- Improving the current training to more effectively meet the site managers' professional development relates to the structure of the training within the industry's professional framework. Drawing from the literature findings, facilitating improvements to better support training tends to be contingent to the extent to which the industry and employers can be persuaded towards this. This will be investigated in Hypothesis 3.

- The incidence of the different perceptions between the respondent groups when determining the level of importance of the propositions underlined during the analysis suggest the same phenomenon as in Sub-hypothesis 1A exist. As such, the similar stance was taken for this observation.

6.3.3 Analysis of Sub-Hypothesis 2A

"Improving the training needs analysis (TNA) based on best practice approaches will improve the training provisions"

Training best practice approaches underlined by the research suggest that TNA are the determinants of effective training while the findings from sub-hypothesis 1A suggest that the current training provisions can be more effective in meeting the site managers training needs. This sub-hypothesis investigates the validity and the significance of adopting the best practice approaches for improving the accuracy of the training TNAs.

6.3.3.1 CIOB C/DSM TNA

The accuracy of the current training TNA was first analysed. The emergent aggregate value (3.41*) (set against 5.00*) suggest that the training was 'quite' accurate in its TNA (see Table 6.3.3.1a), but there was room for improving the accuracy.

CIOB C/DSM Training	Site Managers	Senior Managers	Training organisations/ Colleges	Total	ANOVA
Median	3.33	3.42	3.65	3.41	0.34
N	52	33	17	102	

Table 6.3.3.1a: Accuracy of the CIOB C/DSM TNA (Median and ANOVA test results)

The ANOVA test result (0.34**) suggests quite significant concordance within mean values inferring the common agreement between respondent groups. The slight anomaly within the result was contributed by the trainers/training managers from training organisations/colleges who tend to rate the TNA more accurate (3.65*) compared to senior managers (3.42*) and site managers (3.33*).

The significance of improving the training provisions with the best practice TNA approaches were analysed and to enable this, the null-hypothesis below were developed and tested.

Null-hypothesis: "The best practice approaches propositioned would not be significant for improving the accuracy of the CIOB C/DSM training in identifying the site managers' training needs"

Results of the Chi-square test (see Table 6.3.3.1b) all recorded strong values (0.00) for the null-hypothesis to be rejected confirming that the propositions for improving the accuracy of the TNA are all valid.

CIOB C/DSM Training	Consider collective needs of the site manager, the employer and their project	Involve the training manager and/or line manager during TNA	Identify the training gap by mapping present level of skill/knowledge against those required at the job	Consider feedback from previous training evaluations
Asymp. Sig.	0.00	0.00	0.00	0.00

Table 6.3.3.1b: Validity of improving the accuracy of the CIOB C/DSM TNA with best practice training approaches (Chi-square test results)

In analysing the significance of adopting best practice TNA approaches (set over 5.00*), the close median values (see Table 6.5.1c) infers that all the approaches were perceived of almost equal significance for improving the accuracy of the training TNA. *Involving the training manager and/or line manager when identifying training needs* was rated the most significant (3.28*), followed by *taking into account the collective needs of the site managers' career, project and organisation* (3.20*); *identifying the training 'gap' by mapping the present knowledge and skills against the performance required at the job* (3.20*), and; *consideration of feedback from previous training evaluations* (2.96*).

CIOB C/DSM Respondent Type		Consider collective needs of the site manager, the employer and their project	Involve the line manager/training manager	Mapping present knowledge and skills against performance required at the job	Consider feedback from previous training evaluation
Site Manager	Median	3.23	3.37	3.27	2.96
	N	52	52	52	52
Senior Managers	Median	3.18	3.21	3.24	3.10
	N	33	33	33	33
Training Org./Colleges	Median	3.12	3.12	2.88	2.71
	N	17	17	17	17
Total	Median	3.20	3.28	3.20	2.96
	N	102	102	102	102
ANOVA (sig.)		0.80	0.32	0.10	0.20

Table 6.3.3.1c: Improving the accuracy of the CIOB C/DSM TNA (Median and ANOVA test results)

The ANOVA test result for *taking into account the collective needs of the site managers' career, project and organisation* (0.80**) shows significant non-concordance, inferring the significant difference in perception between the respondent groups. The smaller ANOVA results for *involving the training manager and/or line manager when identifying training needs* (0.32**), *identifying the training gap by mapping their present level of skill and knowledge against the performance expected* (0.10**) and *feedback from previous training evaluations* (0.20**) shows their tendency to strongly agree more for these approaches.

6.3.3.2 NVQ/SVQ SS/SM TNA

The aggregate median value (3.11*) registered from the analysis of median suggest that the TNA (see Table 6.3.3.2a) is relatively accurate in identifying the site managers' training needs but this can be further enhanced.

NVQ/SVQ SS/SM training	Site Managers	Senior Managers	Training Organisations/ colleges	Total	ANOVA
Median	3.03	2.97	3.80	3.11	0.01
N	33	29	10	72	

Table 6.3.3.2a: Accuracy of the NVQ/SVQ SS/SM TNA (Median and ANOVA test results)

The close concordance within the ANOVA test results (0.01**) implies strong common agreement between the respondent groups on the current level of accuracy of the training. Training organisations/colleges tend to be more optimistic about accuracy of the TNA (3.80*) but senior managers (2.97*) and site managers (median 3.03*) tend to agree that the TNA is less accurate.

Following this the null-hypothesis below was developed and tested:

Null-hypothesis: "The best practice approaches propositioned would not improve the accuracy of the NVQ/SVQ SS/SM training in identifying the site managers' training needs"

The Chi-square test results (see Table 6.3.3.2b) recorded values that suggest null-hypothesis should be rejected (0.00) to validate the propositions within this sub-hypothesis.

NVQ/SVQ SS/SM training	Consider collective needs of the site manager, the employer and their project	Involve the training manager and/or line manager during TNA	Identify the training gap by mapping present level of skill/knowledge against those required at the job	Consider feedback from previous training evaluations
Asymp. Sig.	0.00	0.00	0.00	0.00

Table 6.3.3.2b: Validity of improving the accuracy of the NVQ/SVQ SS/SM TNA with best practice training approaches (Chi-square test results)

Results from the median analysis (set against 4.00*) were quite close to infer the equal significance of the approaches to improve the accuracy of the TNA (see Table 6.3.3.2c). *Identifying the training 'gap' by mapping the present knowledge and skills against the performance required at the job* (3.19*) was perceived as the most significant approach. This was followed by *involving the training manager and/or line manager when identifying training needs* (3.13*), *considering the collective needs of the site managers' career, project and organisations* (3.00*), and *considering feedback from previous training evaluations* (2.94*)

The AVOVA test results found greater tendency of non-concordance within the mean values for *identifying the training 'gap' by mapping the present knowledge and skills against the performance required at the job* (0.82**) and *consideration of feedbacks*

from previous training evaluations (0.79**) inferring strong different perceptions between the respondent groups.

NVQ/SVQ SS/SM training		Consider collective needs of the site manager, the employer and their project	Involve the line manager/training manager	Mapping present knowledge and skills against performance required at the job	Consider feedback from previous training evaluation
Site Manager	Median	3.15	3.03	3.21	3.00
	N	33	33	33	33
Senior Managers	Median	2.83	3.14	3.14	2.93
	N	29	29	29	29
Training org./colleges	Median	3.00	3.40	3.30	2.80
	N	10	10	10	10
Total	Median	3.00	3.13	3.19	2.94
	N	72	72	72	72
ANOVA (sig.)		0.13	0.38	0.82	0.79

Table 6.3.3.2c: Improving the accuracy of the NVQ/SVQ SS/SM TNA (Median and ANOVA test results)

The smaller ANOVA values for *involving the training manager and/or line manager when identifying training needs* (0.38**) and *taking into account the collective needs of the site managers' career, project and organisations* (0.13**) suggest the opposite for these approaches.

6.3.3.3 Findings drawn from the analysis

- Results from the analysis confirms that the CIOB C/DSM and the NVQ/SVQ SS/SM training are relatively accurate in identifying the site managers' training needs but their accuracy can be further improved. The CIOB C/DSM training respondents tends to perceive that their training TNA was more accurate then the NVQ/SVQ SS/SM although the difference is not very major.

- The accuracy of both the training TNAs can be improved by:

i. taking into account the collective needs of the site managers' career, project and organisations;

ii. involving the training manager and/or line manager when identifying training needs;

iii. identifying the training 'gap' by mapping the present knowledge and skills against the performance required at the job; and

iv. considering feedback from previous training evaluations.

- The closeness of the perceived importance of the approaches advocates the view that they are all important and therefore, must all be considered collectively. The trend of contradictions found between the respondent groups in some of the analysis was noted.

6.3.4 Analysis of Sub-Hypothesis 2B

"The training provisions will improve by expanding the training design with best practice approaches"

The data analysis for this sub-hypothesis was approached by examining two key elements of training design. First was the analysis on the effectiveness of the training in integrating the element of training best practice within its design and the second was the analysis of the effectiveness of structure of the training in developing site management competency.

The elements of best practice in designing training identified for the investigation were:

- the ability of the training to match the project operations;
- the adaptability of the training to the project management style;

- the off-site training provision;
- the on-site training provision;
- the assessment of competency; and
- the promotion of innovation to current practices.

The alternative training structures investigated in the second analysis was:

- structured and modular off-the-job and on-the-job training.
- non-structured but modular off-the-job training and on-the-job-training;
- structured and modular on-the-job only training; and
- non-structured but modular off-the-job only training.

Structured training was defined as formal training with a specific training curriculum conducted by trainers/peers during the training session, while modular training refers to the modules for training key site management knowledge and skills. This was highlighted in the questionnaires during the data collection.

6.3.4.1 CIOB C/DSM training design

Results from the analysis of median (see Table 6.3.4.1a) for the integration of best practice elements within the training design (set against 5.00*) show that the training design was perceived quite effective.

The *off-site training provision* (3.36*) was most highly rated, followed by *the assessment of competency* (mean 3.25*), *adaptability of the training to the project operations* (3.22*), *promotion of innovation to current practices* (3.16*), *the on-site training provision* (3.16*) and *adaptability of the training to the project management style* (3.13*).

CIOB C/DSM Respondents		Ability to the project operations	Adaptability to the project management style	The off-site training provision	The on-site training provision	The competency assessment	Promotion of innovation to current practices
Site managers	Median	3.21	3.15	3.35	3.27	3.21	3.19
	N	52	52	52	52	52	52
Senior Managers	Median	3.12	2.88	3.24	3.06	3.24	3.00
	N	33	33	33	33	33	33
Training Org./ Colleges	Median	3.41	3.53	3.65	3.00	3.35	3.35
	N	17	17	17	17	17	17
Total	Median	3.22	3.13	3.36	3.16	3.25	3.16
	N	102	102	102	102	102	102
ANOVA (sig.)		0.42	0.01	0.25	0.37	0.83	0.31

Table 6.3.4.1a: Effectiveness of the CIOB C/DSM training against the elements of best practice training design (Median and ANOVA test results)

The ANOVA (means) results revealed results to infer significant non-concordance values for the *assessment of competency* (0.83**), moderate non-concordance for the *ability of the training to match the training to the project operations* (0.42**) and *the on-site training provision* (0.31**) inferring the different perceptions between respondent groups. There was no significant evidence of this for the other elements.

Proceeding to the second analysis, the significance of the effectiveness of the training structures in developing site management competency was tested by validating the null-hypothesis developed below:

Null-hypothesis: "The training structures propositioned are not significant for developing site management competency of the CIOB C/DSM training"

The validity of the propositions were confirmed when the Chi-square results of the propositions were confirmed when the Chi-square results (see Table 6.6.1b) all registered results (0.00) for all the null-hypothesis to be rejected.

CIOB C/DSM Training	Structured and modular off-the-job and on-the-job training	Non-structured but modular off-the-job and on-the-job training	Structured and modular on-the-job only training	Non-structured but modular off-the-job only training
Asymp. Sig.	0.00	0.00	0.00	0.00

Table 6.3.4.1b: Validity of the different training structures for the CIOB C/DSM training (Chi-square test results)

The resulting analysis of median (over 5.00*) shows strong support for the significance of *structured and modular on-the-job and off-the-job training* (3.75*) (see Table 6.3.4.6.1c) for developing site management competency. There were little significant contradictions between the perceptions of the respondent groups in determining the level of importance for this analysis as exemplified by the ANOVA test results (< 0.27**).

CIOB Respondents		Structured & modular on-the-job & off-the-job training	Non-structured but modular on-the-job training	Structured and modular on-the-job only training	Non-structured but modular off-the-job only training
Site managers	Median	3.62	3.27	3.21	3.02
	N	52	52	52	52
Senior managers	Median	3.85	3.06	3.33	2.48
	N	33	33	33	33
Training Org./Colleges	Median	3.94	2.59	2.88	2.76
	N	17	17	17	17
Total	Median	3.75	3.09	3.20	2.80
	N	102	102	102	102
ANOVA (sig.)		0.21	0.02	0.27	0.03

Table 6.3.4.1c: Effectiveness of the CIOB C/DSM training structures for developing site management competency (Median and ANOVA test results)

6.3.4.2 NVQ/SVQ SS/SM training design

The median results all registered similar values inferring that the training design has been quite effective in assimilating the elements of best practice in the training design (see Table 6.3.4.1a).

NVQ/SVQ SS/SM Training		Ability to the project operations	Adaptability to the project management style	The off-site training provision	The on-site training provision	The competency assessment	Promotion of innovation to current practices
Site managers	Median	3.36	3.27	3.09	3.18	3.06	3.15
	N	33	33	33	33	33	33
Senior Managers	Median	2.86	2.30	3.14	3.14	3.14	2.90
	N	29	29	29	29	29	29
Training Org./Colleges	Median	3.30	3.60	3.30	3.20	3.80	3.10
	N	10	10	10	10	10	10
Total	Median	3.15	3.17	3.14	3.17	3.19	3.04
	N	72	72	72	72	72	72
ANOVA (sig.)		0.02	0.01	0.76	0.96	0.07	0.49

Table 6.3.4.2a: Effectiveness of the NVQ/SVQ SS/SM training against the elements of best practice training design (Median and ANOVA

Assessment of competency (3.19*) registered slightly higher value, followed by *on-site training provision* (3.17*), *adaptability of the training to the project management style* (mean 3.17*), *adaptability of the training to the project operations* (3.15*) and *promotion of innovation to current practices* (3.04*). The ANOVA values infer significant non-concordance perceptions between the respondent groups for the *on-site training provision* (0.96**) and *off-site training provision* (0.76**). Moderate significant non-concordance value was also recorded for *promotion of innovation to current practices* (0.49**). The other results all posted very low values to infer the strong concordance within the mean values.

The null-hypothesis developed and tested was:

Null-hypothesis: "The training structures propositioned are not significant for developing site management competency of the NVQ/SVQ SS/SM training".

NVQ/SVQ SS/SM training	Structured and modular off-the-job and on-the-job training	Non-structured but modular off-the-job and on-the-job training	Structured and modular on-the-job only training	Non-structured but modular off-the-job only training
Asymp. Sig.	0.01	0.00	0.02	0.00

Table 6.3.4.2b: Validity of the different training structures for the NVQ/SVQ SS/SM training (Chi-square test results)

The validity of the propositions were confirmed when the Chi-square results (see Table 6.3.4.1b) all registered results for all the null-hypothesis to be rejected.

NVQ/SVQ SS/SM training		Structured & modular on-the-job & off-the-job training	Non-structured but modular on-the-job training	Structured and modular on-the-job only training	Non-structured but modular off-the-job only training
Site managers	Median	3.62	3.27	3.21	3.02
	N	52	52	52	52
Senior managers	Median	3.84	3.06	3.33	2.48
	N	33	33	33	33
Training Org./Colleges	Median	3.94	2.58	2.88	2.76
	N	17	17	17	17
Total	Median	3.75	3.09	3.20	2.80
	N	102	102	102	102
ANOVA (sig.)		0.50	0.02	0.27	0.03

Table 6.3.4.2c: Effectiveness of the NVQ/SVQ SS/SM training structures for developing site management competency (Median and ANOVA test results)

The values recorded from the median analysis (set over 5.00*) support *structured and modular on-the-job and off-the-job training* (3.75*) as the most significant training structure for developing effective site management competency (see Table 6.3.4.2c). The other mean values were clearly lower with *non-structured but modular off-the-job only training* (mean 2.80*) the least favoured. The ANOVA values infer quite significant contradiction between the perceptions of the respondent groups in determining the value for *structured and modular off-the-job and on-the-job training* (0.50**) whilst the other results shows strong concordance within the values inferring their strong common perceptions.

6.3.4.3 Findings drawn from the analysis

- It was concluded that structured and modular off-the-job and on-the-job training is the most appropriate for the CIOB C/DSM training. As such, no change to its current structure is suggested. There was no conspicuous evidence of weakness of this training in assimilating all the elements of best practice underlined in its

training design. However, the incidence of 'gaps' between its current levels of effectiveness and the maximum level of effectiveness that can be achieved for these elements suggest that this can be further enhanced.

- The same phenomenon of discordance between the CIOB C/DSM training respondent groups on the effectiveness of the *assessment of competency* and *adaptability to the project* was noted.

- The NVQ/SVQ SS/SM training was found relatively effective in integrating all the elements of best practice within its training design. Similarly as the CIOB C/DSM training, there are potential for these to be further improved.

- The recurring incidence of differences in perceptions between the NVQ/SVQ SS/SM respondent groups was noted. Despite the slight difference in their perceptions, *structured and modular on-the-job and off-the-job training* was strongly perceived the more significant training structure for promoting site management competency to infer that a certain level of 'intervention' to the learning process would be necessary if the training design is to be more effective. This suggests the need to reconsider the structure of the current training.

6.3.5 Analysis of Sub-Hypothesis 2C

"Expanding the approach to train based on best practice will improve the training provisions"

The prospect for improving the training through the expansion of the current training method was the focus of this analysis. The best practice training methods identified to enhance the training provisions were:

- case-studies
- role play
- lectures
- group discussions
- combine use of the above range of training methods

6.3.5.1 CIOB C/DSM training methods

Null-hypothesis: "The CIOB C/DSM training will not improve with the best practice training methods propositioned"

The Chi-square test results (see Table 6.3.5.1a) support the null-hypothesis for *group discussions* (0.00) and *combine use of the range of training methods* (0.00) to be rejected but the null-hypothesis for case *studies* (0.08), *role play* (0.69) and *lectures* (0.32) to be accepted. This validates more *group discussions* and further *combination of the methods used within the current training* are the approaches significant for expanding the current training.

CIOB C/DSM Training	Case studies	Role play	Lectures	Group discussions	Combine use of the range of training methods
Asymp. Sig.	0.08	0.69	0.32	0.00	0.00

Table 6.3.5.1a: Validity of expanding the CIOB C/DSM training with the best practice training methods (Chi-square test results)

The median values (set over 4.00*) registered for both *group discussions* (2.86*) and *combine used of training methods* (mean 2.75*) infers the relative significant level to which the training would improve by considering these approaches (see Table 6.3.5.1b).

Their small ANOVA values (0.02** and 0.00** respectively) infer the common agreement between the respondent groups to these values.

CIOB C/DSM Respondents		Case-studies	Role-play	Lectures	Group discussions	Combination of the various training methods
Site managers	Median	2.62	2.38	2.60	3.06	3.10
	N	52	52	52	52	52
Senior managers	Median	2.67	2.70	1.97	2.55	2.27
	N	33	33	33	33	33
Training Org./ Colleges	Median	2.76	2.18	2.24	2.88	2.59
	N	17	17	17	17	17
Total	Median	2.66	2.45	2.33	2.86	2.75
	N	102	102	102	102	102
ANOVA (sig.)		0.77	0.12	0.01	0.02	0.00

Table 6.3.5.1b: Improving the CIOB C/DSM training with the best practice training methods (Median and ANOVA test results)

6.3.5.2 NVQ/SVQ SS/SM training methods

Null-hypothesis: "The NVQ/SVQ SS/SM training will not improve with the adoption the best practice training methods propositioned"

NVQ/SVQ S/SM training	Case studies	Role play	Lectures	Group discussions	Combine use of the range of training methods
Asymp. Sig.	0.64	0.16	0.00	0.02	0.00

Table 6.3.5.2a: Validity of expanding the NVQ/SVQ SS/SM training with the best practice training methods (Chi-square test results)

Results from the Chi-square test (see Table 6.3.5.2b) suggest null-hypothesis for *lectures* (0.00), *group discussions* (0.02) and *combine use of the range of training methods* (0.00) to be rejected inferring the proposition that the training will improve by adopting more of these methods. However, results for *case studies* (0.64) and *role play* (0.16) suggest the null-hypothesis to be accepted, invalidating these methods for improving the training.

NVQ/SVQ SS/SM Respondents		Case-studies	Role-play	Lectures	Group discussions	Combination of the various training methods
Site managers	Mean	2.33	2.09	2.45	2.85	2.88
	N	33	33	33	33	33
Senior managers	Mean	2.66	2.52	1.79	2.45	2.03
	N	29	29	29	29	29
Training org. / colleges	Mean	2.00	2.10	1.90	2.60	2.00
	N	10	10	10	10	10
Total	Mean	2.42	2.26	2.11	2.65	2.42
	N	72	72	72	72	72
ANOVA (sig.)		0.04	0.06	0.00	0.02	0.00

Table 6.3.5.2b: Improving the NVQ/SVQ SS/SM training with the best practice training methods (Median and ANOVA test results)

The difference in the mean values (see Table 6.3.5.2b) between the training methods for more *group discussions* (2.65*) and *combine use of the range of training methods* (mean 2.42*) and *lectures* (2.11*) suggest their different significant levels for improving the training. The small ANOVA values (<0.06**) for the training methods infer the strong agreement between the respondent groups in determining the mean values.

6.3.5.3 Findings drawn from the analysis

- It was concluded that both the CIOB C/DSM and NVQ/SVQ SS/SM training can be improved by the expanding the current training with the adoption of the training methods identified.

- The CIOB C/DSM training respondent groups commonly perceive that *group discussions* and *combination of the various training methods* would contribute to enhance the effectiveness of the training. Conversely, the NVQ/SVQ SS/SM respondent groups perceive that *lectures, group discussions* and *combination of*

the various training methods were the methods to further improve the current training effectiveness.

6.3.6 Analysis of Sub-Hypothesis 2D

"Improving the approach to evaluate the training based on best practice will improve the training provisions"

The propositions for expanding the current training evaluation approach to improve the training was analysed and the 'best practice' approaches considered were:

- re-establish he method to assess the application of knowledge and skills learned following training;
- include the line manager, training manager and the trainer to evaluate the training; and
- reconsider the stages when competence should be assessed.

6.3.6.1 CIOB C/DSM training evaluation

The effectiveness of the current training evaluation effectiveness were first investigated.

CIOB C/DSM Training	Site Managers	Senior Managers	Training/Course Providers	Total	ANOVA (sig)
Median	3.33	2.82	3.65	3.22	0.00
N	52	33	17	102	

Table 6.3.6.1a: Effectiveness of the CIOB C/DSM training evaluation (Median and ANOVA test results)

The aggregate median value (3.22*) from the analysis of median (over 5.00*) infers that the current training (see Table 6.3.6.1a) effective but with the potential for further improvement. Significant concordance value was recorded from the ANOVA test result (0.00**) inferring their strong agreement in determining the aggregate mean value.

Between them, trainers/training managers from training organisations/colleges tend to rate the evaluation more effective (3.65*), followed by senior managers (3.33*) but site managers tends to perceive the evaluation least effective (2.81*).

The proposition for improving the current training with the best practice evaluation approaches was next investigated. The null-hypothesis developed and tested was:

Null-hypothesis: "The best practice training evaluation approaches propositioned would not improve the effectiveness of the CIOB C/DSM training evaluation"

The results of the Chi-square test (see Table 6.3.6.1b) all recorded values (0.00) for the null-hypothesis to be rejected confirming the proposition that the best practice approaches propositioned to improve the training evaluation are valid.

CIOB C/DSM Training	Re-establish the method to assess the application of knowledge and skills learned following the training	Include the line manager, training manager and trainer to evaluate the training	Reconsider the stages when competence should be measured
Asymp. Sig.	0.00	0.00	0.00

Table 6.3.6.1b: Validity of improving the CIOB C/DSM training with the best practice training evaluation approaches (Chi-square test results)

The median values (over 4.00*) that emerge from the medians analysis (see Table 6.3.6.1c) suggest that between the choices, *including the line manager, training manager and the trainer to evaluate the training* (2.79*) was perceived to be most significant, followed by *re-establishing he method to assess the application of knowledge and skills learned following training* (2.78*) and *reconsidering the stages when competence should be assessed* (2.64*).

CIOB Training Respondents		Re-establishing the method to assess the application of knowledge & skills following the training	Including the line manager, training manager & the trainer to evaluate training	Reconsidering the stages when competence should be assessed
Site managers	Mean	2.87	2.94	2.83
	N	52	52	52
Senior managers	Mean	2.76	2.76	2.58
	N	33	33	33
Training org./ colleges	Mean	2.53	2.41	2.18
	N	17	17	17
Total	Mean	2.77	2.79	2.64
	N	102	102	102
ANOVA (sig)		0.17	0.05	0.02

Table 6.3.6.1c: Extent to which the CIOB C/DSM training would improve by considering the best practice evaluation approaches (Median and ANOVA test results)

The ANOVA means test results which show close concordance of the mean values (< 0.11**) infers the strong agreement between the respondent groups for these values.

6.3.6.2 NVQ/SVQ SS/SM training evaluation

The median analysis (3.10*) emerge to infer that the training evaluation has been relatively effective (see Table 6.3.6.2a) but can be further improved. The small ANOVA value (<0.02**) also infers the common agreement between the respondent groups for the median value.

NVQ/SVQ SS/SM training	Site Managers	Senior Managers	Training Organisations/ Colleges	Total	ANOVA (sig)
Mean	3.03	3.04	3.50	3.10	0.02
N	33	29	10	72	

Table 6.3.6.2a: Effectiveness of the NVQ/SVQ SS/SM training evaluation (Median and ANOVA test results)

Similarly as in the case for the CIOB C/DSM training, trainers organisations/colleges tend to rate the current evaluation more effective (3.50*), whilst the senior managers

(3.04*) and the site managers (3.03*) tend to perceive the evaluation at a lower effective level.

The null-hypothesis developed and tested was:

Null-hypothesis: "The approaches propositioned would not improve effectiveness the NVQ/SVQ SS/SM training evaluation"

NVQ/SVQ SS/SM training	Re-establish the method to assess the application of knowledge and skills learned following the training	Include the line manager, training manager and trainer to evaluate the training	Reconsider the stages when competence should be measured
Asymp. Sig.	0.01	0.00	0.00

Table 6.3.6.2b: Validity of improving the NVQ/SVQ SS/SM training with the best practice training evaluation approaches (Chi-square test results)

The Chi-square test (see Table 6.3.6.2b) reveal values for all the null-hypothesis to be rejected (<0.05) to support that validity of improving the training evaluation with the best practice training evaluation approaches.

NVQ/SVQ SS/SM Respondents		Re-establishing the method to assess the application of knowledge & skills following the training	Including the line manager, training manager & the trainer to evaluate training	Reconsidering the stages when competence should be assessed
Site managers	Median	2.73	2.79	2.94
	N	33	33	33
Senior managers	Median	3.03	2.83	2.93
	N	29	29	29
Training org./ colleges	Median	2.20	2.80	2.50
	N	10	10	10
Total	Median	2.78	2.81	2.88
	N	72	72	72
ANOVA (sig)		0.15	0.98	0.24

Table 6.3.6.2c: Extent to which the NVQ/SVQ SS/SM training would improve by considering the best practice evaluation approaches (Median and ANOVA test results)

The emergent values from the median analysis (see Table 6.3.6.2c) show quite close values to suggest that the three approaches are of quite equal importance. Their median values (range 2.78* – 2.88*) over a possible maximum value of 4.00* suggest their relative significance for improving the training. While there were strong concordance within the mean values for *re-establish the method to assess the application of knowledge and skills learned following training* (0.15**) and *reconsider the stages when competence should be assessed* (0.24**), the ANOVA results also infers significant different perceptions between the respondent groups for the *inclusion of line manager, training manager and the trainer to evaluate the training* (0.96**).

6.3.6.3 Findings drawn from the analysis

- It was concluded both the CIOB C/DSM and the NVQ/SVQ SS/SM evaluation are quite effective. Notwithstanding, their effectiveness can be significantly improved by the considering the best practice evaluation approaches underlined. With the exception of *inclusion of line manager, training manager and the trainer to evaluate the training* for the NVQ/SVQ SS/SM respondent groups, all respondents for both the training have a strong common on perception on the significance of the approaches for improving the training evaluation effectiveness.

6.4 FINDINGS CULMINATING FROM THE QUANITATIVE DATA ANALYSIS

The findings that emerged from the analysis confirms the validity of the Hypothesis 1 that the current CIOB C/DSM and NVQ/SVQ SS/SM training provisions can be improved with better understanding of the holistic training needs of site managers and Hypothesis 2 that the current CIOB C/DSM and NVQ/SVQ SS/SM training provisions

can be improved with the adoption of best practice approaches within their training processes. The approaches identified significant for improving both the training schemes were summarised as follows:

6.4.1 Improving the training provisions with better understanding of the holistic training needs of site managers.

The approaches identified from Hypothesis 1 for improving the CIOB C/DSM and NVQ/SVQ SS/SM training provisions were:

(i) Overcome the differences in the perception of the objectives of the training, particularly between the key parties related to the training i.e., site managers, employers and training organisations and colleges. Key to overcoming the differences is by underlining that the training should focused at meeting the site managers' job needs; their career development needs; the organisation and project needs; and the adhere to the industry's requirements collectively.

(ii) Improve the support for the site managers' career development needs by:

a. Improving the support for the site managers professional development through:

- linking the training to facilitate site managers to acquire professional membership; and
- recognising the training as a CPD activity.

b. Improving support for the training at the industry level through:

- provisions for compulsory training days/year; and
- considering the training a minimum requirement of staff development programme.

c. Improving the employer support for training through:

- support for continuing education and training;
- paid leave to attend training;
- allowance for the training;
- sponsorship for training;
- logistics support for the training; and
- job enrichment.

Drawing from the findings, it was also propositioned that the above approaches identified could be made more effective if further supported by extrinsic initiatives such as payment of professional fees and pay increment for passing the training, etc.

6.4.2 Improving the training provisions with the adoption of best practice approaches within the training processes.

The approaches identified from Hypothesis 2 for improving the CIOB C/DSM and NVQ/SVQ SS/SM training provisions were:

(i) Improve the accuracy of the training TNA with best practice approaches by:

- taking into account the collective needs of the site managers, their employers and their projects;
- involving the training manager and/or line manager when identifying training needs;
- identifying the training 'gap' by mapping the present level of skill and knowledge against performance required at the job; and
- considering feedback from previous training evaluations.

(ii) Improve the training design by:

- maintaining the current CIOB C/DSM training structure;
- redesigning the current NVQ/SVQ SS/SM training to a more

structured and modular on-the-job and off-the-job training;

- improving the adaptability of the training to project operations;
- improving the adaptability of the training to project management styles;
- improving the on-site training provisions;
- improving the off-site training provisions;
- improving the assessment of competency; and
- encouraging the promotion of innovation to current practices.

(iii) Expand the training on-site and off-site training methods by considering more group discussions, lectures (for the NVQ SS/SM) and the combination of various training methods.

(iv) Improve the effectiveness of the training evaluation by:

- re-establishing the method to assess the application of knowledge and skills;
- including the line manager, training manager and the trainer to evaluate the training; and
- re-considering the stages when competence should be assessed.

6.5 CHAPTER SUMMARY

The chapter have confirmed the hypothesis that the CIOB C/DSM and NVQ/SVQ SS/SM training provisions will improve with:

iii. better understanding of the holistic training needs of site managers (Hypothesis 1), and

iv. adoption of best practice approaches into its training processes (Hypothesis 2).

The approaches propositioned for improving the current training provisions were identified. These were underlined for adoption in the qualitative research enquiry in Hypothesis 3.

The anomalies in the perceptions of the site managers, senior managers and training organisations/colleges when determining the level of significance of the elements investigated were noted and have been included for further investigation in Chapter Seven. However, the other differences were not included as they were peripheral to the objectives of the analysis. Many factors could contribute to the differences and this is a suggested subject for further research.

Chapter Seven continues with the qualitative research investigations to establish the validity of developing an improved framework for training for site managers.

CHAPTER 7
Qualitative Data Collection, Analysis and Findings

7.1 INTRODUCTION

This chapter presents the analysis of data and findings from the research quantitative enquiry. The focus of the investigation was to test the validity of Hypothesis 3 and framework for improving the training of site managers based on best practice propositioned by the research.

The research investigation was approached firstly by analysing the data drawn from the findings of the quantitative research. The techniques adopted to integrate the findings from the quantitative data analysis and the concepts underpinning the research process were clearly underlined, and the approaches adopted for collecting and analysing the data was critically discussed. The process of sequencing the analysis following the findings of the preceding sub-hypothesis was maintained to enable all possible findings to be exhaustively explored.

In testing Hypothesis 3, the two sub-hypotheses developed were tested for their validity. The intervening variables which impinge on the scope to which the propositions can be applied were identified. The justification for adopting certain selected procedures within the processes observed to maintain the research validity and reliability are also clearly explained.

The findings emergent from the analysis were verified and confirmed. These were adopted to augment the best practice training framework for training site managers, which will be reaffirmed in Chapter Eight.

7.2 STRUCTURING THE QUALITATIVE ENQUIRY

7.2.1 Reaffirming the concepts

Conceiving the need to underpin the research investigations with sound understanding of qualitative research, the views of Huberman, and Miles (1994), Mason (1997), Denzin and Lincoln (1998), Cassell and Symon (1995), Robson (2002) and Babbi (1997) were investigated. It was drawn from their converging views that qualitative research aims to enable the researcher to gain a holistic overview of the context under study through intense or prolonged contact with the phenomenon. The task of the research investigation is to explicate the way in which people in a particular setting come to understand, account for, take action and manage the situations. Within the process, data is captured from local participants through the process of deep understanding. In going through the research materials, the researcher may isolate certain themes for careful analysis whilst maintaining their original form throughout the study.

It was further noted from Cassell and Symon (1995) and Huberman and Miles (1994) that qualitative research focuses on naturally occurring and ordinary events in the natural real-life setting where the research confidence is buttressed by 'local groundedness' i.e., data is collected in close proximity to the specific situation. The research investigations are based on focussed and bounded phenomenon or case embedded within the research context. Data obtained are rich, with strong potential for revealing complexity nestled in real context which goes beyond snapshots of "*How?*"; "*What*? or "*How* many?" Its emphasis is on people's experience suited for locating the meanings they place on the events, processes, assumptions, prejudgements and presuppositions. In outlining the research, it was also drawn from Denzin (1990) that

qualitative research is characterised by the inter-related sequential processes of:

(i) framing the research questions;

(ii) deconstruction and critical analysis of prior conceptions of phenomenon;

(iii) capturing the phenomenon;

(iv) bracketing the phenomenon by reducing it to essential elements;

(v) cutting it loose from the natural world so that its essential features and structures may be uncovered;

(vi) construction i.e., putting the phenomenon back together; and

(vii) Contextualisation.

7.2.2 The research questions

Conceiving the benefits of launching qualitative the research with research questions (Shut, 1996; Miles and Huberman, 1994) and in linking the qualitative enquiry with the qualitative findings, a deductive approach was employed to structure the research questions. In enabling this process, as suggested by Huberman and Miles (1994), Blake (1993) and Ritchie and Spencer (in Bryan and Burgess, 1994)), the constructs emergent from the findings from the analysis of Hypothesis 1 and 2 were analysed for their relationships before lining them within a defining concept. These were then confirmed and corroborated with each other via triangulation to confirm the validity of constructs to structure the research questions.

Culminating from this process, the two research questions established were:

Sub-hypothesis 3a:

"What are the approaches that can be considered to overcome; (i) the differences in the perceptions on the importance the objectives of training, and (ii) support for the site

managers career development needs to make the training more holistic for improving the framework for training site managers?"

Sub-hypothesis 3b:

"How can the training best practice approaches identified be adopted to; (i)improve the accuracy of the Training Needs Analysis (TNA), (ii) expand the training design; (iii) expand the training methods, and; (iv) expand the approach to evaluate the training, to improve the framework for training site managers?"

7.2.3 Validity and reliability

Mindful of the difficulty in confirming the validity and reliability of qualitative research due to its uniqueness and its vulnerability to replication, the approach suggested by Burns (2000), Kirk and Miller (1986) and Mason (1997) were mostly drawn circumvent this for the research.

In maintaining validity, the approach to match the logic of the research method as close as possible with the kind of research question and against the kind of social explanation the research is intending to develop was observed. The methodological approaches were articulated with explanations of what the research conceives as the mechanics of the process. Linkages between the constructs, research questions and methodology, and how decisions on the methodological issues were made were underlined and explicitly described.

The research reliability was observed by thoroughly investigating and outlining the research reason with major questions posed. Considering the views of Burns (2000), Miles and Huberman (1994) and Mason (1997), this was observed by explicating

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The research reliability was observed by thoroughly investigating and outlining the research reason with major questions posed. Considering the views of Burns (2000), Miles and Huberman (1994) and Mason (1997), this was observed by explicating

perspectives on the question and stating research assumptions and biases. To demonstrate this, the choice of respondents, data gathering procedures, structure of interviews, relationships with subjects and categories developed for analysis were clearly explained.

The exemplification of approaches adopted to achieve validity and reliability within the research are provided within the related sections of this chapter.

7.2.4 Sampling

The sampling strategy was determined by firstly setting the sampling parameter. The boundaries to define aspects of the case investigated were set to ensure that the research question can be studied within the research limits of time and means.

As qualitative research is usually operated with small samples of people, nestled within their context and studied in-depth and the tendency for the research to be purposive rather than random (Huberman & Miles, 1994), the sampling of respondents was carried out by carefully identifying the respondents from the list identified during the research fieldwork. The key criteria for the selection were senior and experienced training managers who are/have been directly been involved with the CIOB C/DSM and the NVQ/SVQ SS/SM training.

Five respondents were selected. Two of the respondents; one with over 20 years experience (Respondent 5) and the other with about 15 years experience (Respondent 3), were chosen from two construction organisations that have been providing CIOB C/DSM and NVQ/SVQ SS/SM training in-house as well as to the industry. The third respondent (Respondent 1) is the senior training manager with over 5 years training

experience from a top construction training organisation (which is also part of large construction organisation) that have been very successful in providing NVQ/SVQ training at the apprentice level. The fourth respondent (Respondent 4) is the training manager from a medium-sized construction organisation for his views on his experience in sourcing industry level training to his organisation's site managers. The fifth respondent (Respondent 2) is a senior training manager (over 10 years experience) from CITB who have been providing NVQ/SVQ SS/SM training to site supervisors and site managers.

7.2.5 The research instrument

The choice of semi-structured interview for the research was also drawn after considering the views of Kale (1996), Mason (1997), Faddy (1994) and Mann (1985). This was from noting that most qualitative researches see the very fluidity and flexibility of semi-structured interviewing as enhancing the validity of the research investigation against structured questionnaire (Mason, 1997). It offers the facility to probe for the answers, clarification and elaboration in a manner which would allow qualitative information to be recorded within a standardised format. This was further augmented by the finding from May (1997) that semi-structured interviews are often very useful for complementing other research methods.

The views of Kvale (1996) were mostly drawn to design the interview. It was borne that the interview was aimed to obtain factual information and opinion through descriptive data, and that the interview questions were developed within the typologies or 'themes' drawn from the quantitative research findings. Ethical considerations were considered in the interview process. Consent from the respondents was first sought from the interviewees and their employers, and for the interviews to be recorded prior to

its commencement. The respondents were assured of the confidentiality of the interviews. Upon completion, the respondents were debriefed and thanked. They were informed of how the interviews have contributed useful insights to the research investigations and the important points that emerged were pointed out. Consent for the production of transcripts was sought and obtained following the debriefing process.

A Sony (M-450) micro-cassette recorder was chosen as the equipment to record the interviews. The outline of the draft adopted to format and design the interview questions is as shown in Appendix D1.

7.2.6 Piloting the research

Pilot study for the research was carried out to ensure the significance and practicality of the interview design. The views of Blaxter *et al* (1996), Babbie (1997) and Kvale (1996) were drawn to guide through the process

The approach involves getting the assistance of two key parties to assist refine the research questions, interview procedures and questions before deciding to undertake the actual interview. The first round of the pilot study was carried out by discussing the interview process, format and structure with two senior lecturers from Sheffield Hallam University. The frame of reference of the discussions was the method adopted to draw the research questions, tentative questions to be posed, provisional respondents, and the time and length of the interview proposed. All comments made were noted and adopted to refine the interview format. Following this, some of the interview questions were reworded and the structure of the questioning rearranged.

The second stage of the interview involves a mock interview with a fellow PhD

candidate from the University of Sheffield who is also an architect and academic with over 10 years experience in the construction industry. Feedback, particularly on the conduct of the interview, the approach of the questioning, the time taken and the structure of the questioning during this session were noted to further fine tune the interview design and process. The final format of the interview and the interview questions is shown in Appendix D2.

7.2.7 Processing the data

The first stage involves handling raw data recorded from the semi-structured interviews. To enable this all the recorded interviews were converted and transcribed into Microsoft Word format. Once complete, verbatim from the transcriptions were entered into the Atlas.ti Version 4.1 (Qualitative Data) software programme for processing and the manual provided by the software was used to guide the data handling process. The choice for using this software was based on the conviction that it would enhance the internal validity of the research. It offers the facility for sorting, ordering, indexing, cataloguing, recalling and reducing data for analysis with rigour and consistency, and reduces the probability of errors during the process. Its provision which allows easy cross-sectional analysis between the 'themes' and 'sub-themes' within the data and as according to the structure of the research questions facilitates the comprehensive exploration of data for the analysis. Once the data was processed, a detailed analysis was carried out. Special attention was given to paradoxes which could provide fresh insights to the phenomenon investigated during the analysis.

7.3 Analyses and Findings

The views of Mason (1997), Kirk and Miller (1986), Ritchie and Spencer (in Bryman and Burgess, 1994)) and Miles and Huberman (1994) were key in deciding the approach

to analyse data. Data were first sieved based on their capability for signifying the explanation and those selected were treated as literal and circumstantial evidence to represent evidence of the findings. Cross-sectional and comparative approach of analysis was employed. Prior to the examination, cross-checking to reaffirm the comparability of data against the typologies or themes/sub-themes drawn from the research questions was carried out.

Drawing from Bryman and Burgess (1994), the reading of data was undertaken by analytically checking how well the data contribute to make claims, and how best the data can assist to make sense of the phenomenon investigated. The process was re-checked to ensure that the conceptual categories were not overlooked and to facilitate the analysis across the board data set. The typology or theme 'files' produced from this process were considered for generating analytical commentaries based on the descriptive materials contained in the files.

Mindful of the danger of analysing data which have been removed from their contexts, care was taken to note the context from which the data was drawn and to ensure that they could be retrieved when making the analyses. To facilitate further the discussions on how the analyses carried, the analysis together with the data drawn (provided in the boxes in the texts) from the themes/sub-themes are discussed in 7.3.1 and 7.3.2, and their interpretations follow in 7.3.3.

7.3.1 Contextualising the analysis

In conceiving the importance of contextualising the data drawn for the analysis of both the CIOB C/DSM and the NVQ/SVQ training programmes, the factors that impinge the views provided by the data were first drawn to establish the setting within which the

data was explicated. These were outlined as follows:

- The poor approach of identifying the training for site managers within some segments of the industry:

> *"Somebody else is supposed to come but he cannot make it, so I have been asked to replace him ....., and it happens in a large percentage of people coming in our courses"*
>
> *(Respondent 2)*
>
> *"I don't think they are fully aware what the site managers training needs are expected to be and/or what are the courses even their site managers should take up to meet these needs"*
>
> *(Respondent 4)*

- The perception that training is not the responsibility of the employer and training must be provided by the industry:

> *"There is a perception amongst large numbers of companies that anything to do with training it must be something to do with the CITB"*
>
> *(Respondent 2)*
>
> *"..... if they don't have to do it they won't do it"*
>
> *(Respondent 4)*

- Perception that the training levy paid is adequate to cover the cost of training

> *"..... the grant that you get back is nowhere near the amount of training that you provide. It should be borne in mind that no matter what amount of levy that they pay, or the amount of grant that they get, they can't cover the full cost of training"*
>
> *(Respondent 5)*

- Varied training provided to site managers from within the industry:

> *"There is such a gulf, between the companies that provide training and companies that does not provide training to their site managers"*
>
> *(Respondent 3)*

(Cont'd)

"A lot of companies do not do any training whatsoever but on the other extreme there are a lot of companies that does a lot of training"

(Respondent 3)

- The continuing negative perception towards training:

"A lot of companies are not developing or training their people because they believe that as soon as they get their qualifications, they are going somewhere else"

"Again talking to different people, companies and different training providers, the level of support given by line managers/ trade supervisors are next to none"

"There's always this belief in the industry that why should we give these guys training"

(Respondent 1)

"I think people would like to get away with the very basic minimum. It cost and the time that they have to offer. That's the problem"

(Respondent 2)

"I find that the higher management thinks that training is a necessary evil"

(Respondent 4)

".... our Contract Manager is holding the entire budget and he is not interested in whether their trainees are better trained. They are just interested in the bottom line"

(Respondent 3)

- Reluctance to release site managers for training:

"I find that it is a hard slog to get people trained, to get them off the job, even for the safety"

"..... and the last person the Contract or Construction Manager would like to see leave the site is their site manager"

(Respondent 2)

"For a small company, to lose a site manager for say four of five days...they wouldn't want to do it"

(Respondent 3)

- Trend of trainees enrolling into the training who are mostly junior people not looking for professional qualifications:

"At this level they do not seem interested at the professional qualifications"

(Respondent 5)

"When I look at the programme at the colleges, they are mostly comprised of junior people who are preparing for the next step rather than people that are practicing"

(Respondent 5)

- Poor levels of training provided to site supervisors and site managers prior to coming onto the training:

"We get a lot of first line supervisors coming for their NVQ level 3 training who have received few or no training or education"

(Respondent 2)

"They have come up through the craft route and have been given the supervisor's role for all sorts of reasons but they have received very little training or education to support their new role"

(Respondent 4)

- Changing trend towards realising the importance of training and developing site managers:

"....there has been a great move now towards developing and keeping their people"

" The industry now knows that a good site manager has got to be retained, he's got to be nurtured and he's got to be developed, because they know that they can't go up the road and pick somebody else's up"

"Good people are not available on every doorstep more so than ever. So basically the site managers are beginning to reap the benefit of that. So there is more training and more development carrying on.

"Now people have realised that in the long term, benefits for the industry now is through a qualified workforce"

(Respondent 2)

"The impression is a person who wants to join us wants the knowledge and skills to proceed within the organisation and their career"

(Respondent 5)

7.3.2 Sub-Hypothesis 3A:

The research question:

"What are the approaches that can be considered to; (i) overcome the differences in the perceptions on the importance the objectives of training, and (ii) better support the site managers career development needs to make the training more holistic for improving the framework for training site managers?"

7.3.2.1 Overcoming the differences in the perceptions on the importance of the objectives of the training

A) Data drawn for analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

- Reaffirm the important objectives of the training at the industry level with the industry representatives:

> *"The momentum got to come from government and clients and from the industry"*
> *(Respondent 2)*
>
> *"I don't think there have been enough companies being involved in developing these courses"*
> *(Respondent 3)*
>
> *"Its getting peoples views together. If it is company specific it is easier, but at the institution level is the one who have the ownership of the scheme to take this forward"*
>
> *"I think it is at the organisations leadership level that this needs to be improved"*
> *(Respondent 5)*

- Focusing the initiative at top level management of construction organisations:

> *"Training must be done on the basis of business benefit and should not be not because you are forced"*
> *(Respondent 5)*

(Cont'd)

"I think it is at the organisations leadership level that this needs to be improved. If the Company does not support that, then the site managers will be told that it is not important to the company"

"At the micro picture at the organisation level, we go through a similar procedure"

"We haven't got any somebody at the head of the field that can really demonstrate the benefits of learning"

(Respondent 5)

"We in CITB have to benefit the industry and the employer has to benefit the individual and the organisation"

(Respondent 2)

"It is recognising this at the directors' level, without that we're not get anywhere, it would not flow down to the individual department or sections"

(Respondent 3)

- Develop a framework that can guide training organisations and colleges, employers, managers, line managers and site managers to appreciate the objectives of the training:

"A lot of people in the higher managements doesn't appreciate the importance of learning and training for them to play their part"

"We've introduced the learning form which board is looking to guiding the learning throughout the organisation. It is partly to help them understand the parts and features of the learning cycles and priorities and well as in giving direction"

"The thing is you've got to demonstrate to companies that there's benefits, that's a long term thing which they have been talking about but we certainly haven't convinced them"

"That's the way that it's going to work, from their own belief and behavior before we can take it forward. This is why the first requirement to make sure to sort this issue is to really have some passion in that area"

"Its difficult to manage and dictate that from the centre, at the institution's point of view or colleges"

"The board has actually set out the number of training days that they want from within the organisation per employee.

(Respondent 5)

(Cont'd)

"I think if it's the employers who want the site managers trained, they should be the one to get the best he can from the training provider"

(Respondent 4)

"As it stands at the top, at the directors level, they can say yes, we're into training our staff, as they get down the line at the managers and supervisor's level ..... the interest on training is lost"

(Respondent 1)

"....the directors and managers knowing what their responsibilities are, so that they will be persuaded to train their people"

(Respondent 3)

7.3.2.2 Improving the support for the site managers' career development needs

A) Data drawn for the analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

i Support for the site managers' professional development

- Consider incorporating other qualifications into the training:

"We were thinking that the Chartered Institute of Management may be more appropriate.....which includes leadership and personal competence"

"We're looking to something that have a more blended approach to learning"

"One thing that we've considered in our programme is we have developed BTECH awards, which have included all the people skills programme, which includes leadership and personal competence"

(Respondent 5)

- Maintain the current level of recognition:

"I don't think that an NVQ should be given a qualification higher membership than that, nor is the degree but a combination of both is just about right"

(Respondent 2)

(Cont'd)

"I believe that NVQ level 4 would be sufficient"

(Respondent 1)

"At this level they do not seem interested at the professional qualification i.e., at the ACIOB level"

(Respondent 3)

ii. Support for the training at the industry level:

(Provision for compulsory training days/year and making training a minimum requirement of staff development programme):

- Impress employers that they are also responsible for training:

"It something that can only work top down. Yes, definitely, without it, it's never going to work".

(Respondent 3)

".....the impression is, a person who wants to join the organisation wants the knowledge and skills to proceed within the organisation and their career"

"It should be borne in mind that no matter what amount of levy that they pay, or the amount of grant that they get, they can't cover the full cost of training ..... .and the grant that you get back is nowhere near the amount of training that you provide"

(Respondent 5)

- Provision for training to be made mandatory:

"I do agree that if it is more mandatory, and you have to produce trainees that are trained, I think it will work"

(Respondent 1)

"I think, because there are a lot of medium and small companies, it has got to be something to that effect. As I say, this needs to be put in black and white, if they don't have to do it they won't do it"

(Respondent 3)

"I cannot see anything going forward, without government backing"

(Respondent 4)

"But if you are using it as a vehicle to develop somebody like in we are doing with graduates"

(Respondent 5)

(Cont'd)

"It then it needs support in all sorts of different ways but I don't know how you can manage that or how it can be policed"

(Respondent 5)

- Establish the training within the CSCS requirements:

"There is quite a misconception amongst managers that CSCS card is little more than just passing a simple touch screen safety test followed by company signatures"

"It is good, in the right direction but it could have been looked at in a more in a structured or strategic way. The MCG initiative to have all their staff qualified by 2003 was big plus. The industry is client led. Slowly but surely that will go down the industry down the supply chain"

"That would be a driver. We are at the cross roads at the moment but lets hope that we get across it as soon as possible. The momentum has been lost a little bit, but if we don't get it going it will perish. The momentum got to come from government and clients and from the industry itself"

(Respondent 5)

"If you get in there and its association with the CSCS, the NVQ is the ultimate qualification because it says that you are a competent person in what you are doing. It is very holistic"

(Respondent 2)

"I think the role of CSCS is important, it could have been tighter on training?"

"It is supposed to drive people to training. Its been great up to now as it seems to be grandfather right, somebody can just fill a form and get the card"

(Respondent 3)

- Consider the provision of trained site managers as a contract requirement:

"They can have an equivalent requirement for health and safety"

"I know that they realise that they need qualified people for doing the job, especially when tendering for the job. The clients want to know what qualifications the project team have, but they don't seem to look at the way to push it forward for this training"

(Respondent 4)

"There can be some form of monitoring during the contract to ensure that site managers at the construction sites are trained, perhaps a fine can be introduced. The officer can come to check the training records"

(Respondent 3)

iii. Support for training by the employer

- Allow site managers time for training

> *"If they don't have time, a lot of things go out of the window. Most of the time, they will say, don't worry about this or don't worry about that but at the end the trainees are at the losing end "*
>
> *(Respondent 1)*

- Emphasise the benefits of assisting the site managers' training:

> *"Good people are not available on every doorstep more so than ever. So basically the site managers are beginning to reap the benefit of that. So there is more training and more development carrying on"*
>
> *(Respondent 2)*
>
> *"The thing is you've got to demonstrate to companies that there's benefits"*
>
> *(Respondent 5)*

- Tighter requirements to support training:

> *"As I say, if they don't have to do it they won't do it"*
>
> *(Respondent 1)*
>
> *"Have an equivalent requirement for health and safety, where it can have a provision for them to prove where and how their site managers are trained"*
>
> *(Respondent 3)*
>
> *"The only way I can see anything coming in is coming in from a higher level"*
>
> *"The clients want to know what qualifications the project team have, but they don't seem to look at the way to push it forward for this training"*
>
> *(Respondent 4)*
>
> *"The board has actually set out the number of training days that they want from within the organisation per employee. This doesn't mean that they will fling any form of training but they also demand that it achieve business goals. There is a strong pressure there"*
>
> *(Respondent 5)*

B) Challenges in adopting the approaches propositioned for (i) overcoming the differences in the perceptions on the importance the objectives of training, and

(ii) better support the site managers' career development needs.

- Difficulty in getting support from the industry and construction organisations:

> *"Try these guys... they are not interested. They have other priorities and it just doesn't happen"*
>
> *(Respondent 2)*
>
> *"It then it needs support in all sorts of different ways but I don't know how you can manage that"*
>
> *(Respondent 5)*

7.3.3 Sub-Hypothesis 3B:

The research question:

"How can the training best practice approaches identified be adopted to; (i) improve the accuracy of the Training Needs Analysis (TNA), (ii) expand the training design; (iii) expand the training methods, and; (iv) expand the approach to evaluate the training, to improve the framework for training site managers?"

7.3.3.1 Improving the accuracy of the Training Needs Analysis (TNA)

A) Data drawn for the analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

i. Including the site managers, the line managers (employers) and the training organisations/colleges in determining TNAs:

- Liaise more with site managers, training/line managers and training/course:

> *"They should liaise more with their training manager and line manager, talk to construction managers. If not you wouldn't know what you are missing"*
>
> *(Respondent 4)*

- Encourage employers to undertake needs analysis of their site managers:

> *"Construction companies themselves should have a needs analysis of their own analysis and discuss with training providers what other training needs to be introduced"*
>
> *"At the company level, it's looking at the kind of job they do and what the companies are working for"*
>
> *(Respondent 3)*
>
> *"I think the accurate TNAs can only be carried out by the job holder and his/her line manager and that analysis should be agreed"*
>
> *(Respondent 2)*

- Undertake surveys to identify training needs:

> *"Having a survey, interview, self-assessment forms"*
>
> *(Respondent 3*
>
> *"I should think that a questionnaire by the training providers to these parties could be useful. A survey. I think this is very important"*
>
> *(Respondent 4)*

- Get the views of the industry together:

> *"Our training has been developed with the involvement of many of our people. So, that might meet our needs better than the other courses"*
>
> *"Its getting peoples views together. If it is company specific it is easier, but at the institution level it the one who have the ownership of the scheme to take this forward"*
>
> *(Respondent 5)*

ii. Frequency of TNAs:

- Reconsider the frequency of TNAs

> *"It will be a line of on-going interviews, progress reviews and it should be looked at the individual level"*
>
> *(Respondent 3)*

(Cont'd)

"Do personal reviews every year"

(Respondent 2)

iii. Consider feedback from previous training evaluations:

- Gather feedback from trainees, training organisations/colleges and employers:

"You will only get that feedback by interviewing previous employees/trainees. Yes, you will find out a lot by doing that"

(Respondent 1)

At the macro picture at the organisation level, we go through a similar procedure.

(Respondent 5)

"Construction companies themselves should have a needs analysis of their own analysis and discuss with training providers what other training needs to be introduced"

(Respondent 4)

B) Challenges in adopting the approaches propositioned:

- Overcoming the difficulty in matching the TNAs to the different needs of different construction organisations/activities

"Some companies would want a slight variation to suit them, it's such a diverse industry I don't think there have been enough companies being involved in developing these courses"

"It will be extremely difficult because, there are many different activities"

(Respondent 3)

- Getting the support and participation from site managers and employers:

"But again, would they be willing to come back and participate in things like that?"

(Respondent 1)

7.3.3.2 Expanding the training design

While analysing data from the interview questions relating to the structure of both the training schemes, significant data was identified which directed the enquiry to look at the more elements which are impacting the training. Consequently, the analysis was taken by considering the training structure beyond the structured and modular framework as drawn from the interview questions.

A) Data drawn analysis:

i. Improving the training structure:

(CIOB C/DSM)

- Maintain the current performance assessment based on the NVQ framework:

> *"The NVQ's, it proves what a person can actually do"*
>
> *(Respondent 2)*

- Maintain the training within the current structured and modular mode but reconsider the timing and training schedule:

> *"It is a very, very hard course to do. The other thing is there are very few providers, and if he has to send a trainee to say Leeds, it's an hour on top of that. He wouldn't get home until 10.30pm. And it's twice a week"*
>
> *"From our experience, it's too much ..... with what they have to do in their daily duties, they need to have a day away from work"*
>
> *(Respondent 3)*
>
> *"They don't want to be away from site too long. We do it in one day per week for five weeks and we found that it works much better both from the individual's point of view and their projects"*
>
> *"People are already struggling to get on with what they have to do now"*
>
> *(Respondent 1)*
>
> *"To a certain extent you can best guess what they would need, they would need perhaps something the main subject areas, but then you would need to deliver it in a very flexible course"*
>
> *(Respondent 5)*

(Cont'd)

"So in taking 4 days times 7 modules it takes 28 days for the CIOB certificate, you could probably do that in say six to eight days and bringing them together once a month and picking out some key areas"

"I think now in today's environment, it would be difficult to justify the time of the CIOB programme would need"

(Respondent 5)

- Consider other approaches to make the learning process more effective:

"For CIOB, I think we need to experiment the training in a more flexible forms of learning"

"As a training tool, yes the training is more effective but it tends to be very prescriptive and not very exciting"

" I think it could have been more imaginative"

(Respondent 5)

(NVQ/SVQ)

- Maintain the current entry qualification for the training and approach to assess performance:

"I think the current entry requirement to the training is adequate"

(Respondent 3)

"They just give you a framework which identifies competence gaps"

(Respondent 1)

"I don't see any problem with the current level of trainees enrolling into the training"

(Respondent 5)

"The NVQ's, it proves what a person can actually do"

"I believe those that have completed at NVQ level 2 should go out into employment in the industry and come back to us at later stage, and as recommended by their company for their NVQ level 3 and 4 and beyond"

(Respondent 2)

- Expand the off-site training provisions:

"That will give them a lot of chance to learn and share their experiences. They don't want to be away from site too long. We do it in one day per week for five weeks and we found that it works much better both from the individual's point of view and their projects"

"If they can some form of a meeting or get together sometimes during the training period, it may not have to be too long, maybe for just half a day, that will give them a lot of chance to learn and share their experiences"

(Respondent 4)

"... for various reasons we use the NVQ, ... it's not to say that we've abandoned the off-the-job training"

(Respondent 5)

"That is why the model that we are using is just getting them as a group periodically for a day or two is quite powerful because al least you can identify what were the most common of the gaps, get them to share their knowledge"

(Respondent 5)

B) Data drawn for analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

- Improve the training content to accommodate changing construction practices:

- Stressing human skills within the training modules:

"It's very frightening, that group of very eminent people in CIOB at that time, it was about 4-5years ago, was going through agonisingly if we really need it. I think it is hugely important"

"I don't think that they are getting enough of it in quality in their training"

"We're pretty good in business and technical skills as an industry aren't we, but it's actually delivering through the people"

"That's what the managers should be doing. He doesn't have to know everything. Most important he have to judge people, motivate people, manage them, lead them"

"It is not a question of managing people but what should be emphasized is working with people"

(Respondent 5)

"I strongly believe that it's not just about learning what to do..... more importantly is how best you do it with the people you work with"

(Respondent 3)

B) Challenges in adopting the approaches propositioned:

- Getting the right people to be involved in making decisions:

> *"I attend a lot of committees and sometimes I tend to question who the people is making up these committees who develop things. They can't tell you..."*
>
> *"..... that group of very eminent people in CIOB at that time, it was about 4-5years ago, was going through agonisingly if we really need it"*
>
> *(Respondent 5)*

- Getting the support from awarding bodies:

> *'Getting the awarding bodies to change them it will take years"*
>
> *(Respondent 1)*

- Getting round the organisation of the training which can be bureaucratic:

> *"Obviously the CIOB or CITB (for the NVQ/SVQ) training that outsource the training to colleges and providers, but as a big organisation they can be very bureaucratic"*
>
> *(Respondent 5)*

ii. Improving the adaptability of the training to the project operations and the project management styles

A) Data drawn for analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

- The current training designs are already adequate to accommodate different project operations and project management styles:

> *"This is one of the aspects which I think you can build in into your own schedules"*
>
> *(Respondent 3)*
>
> *"A lot of the subjects which they are doing could be applied anywhere"*
>
> *(Respondent 5)*

(Cont'd)

"You can't actually get a course that can be streamlined with what is going on at the site. This is one of the aspects which I think you can build in into your own schedules"

(Respondent 5)

"No, we don't find them finding this difficult. We actually have a mixed group of 3 and 4 and we don't separate them. We give them basic management training, which is in many respects generic"

(Respondent 2)

- Provision for workshops in cases when the site cannot support the training:

"In situations where they do not have the opportunity to try out the module on site because of the nature or stage of the project, they will need a workshop to undertake this. Unless you get another site when you can get that experience or evidence, this can be difficult"

(Respondent 4)

- Allow the trainees to move to different project sites during the training:

"The more companies they go on the better they are going to learn and experiences anyway"

"We don't believe that any apprentice can go to one site placement and achieve their qualification with that one company because there's not enough scope within their businesses for them to get a full range of the industry

"This will also give them a taste of working in a different range of project environment"

(Respondent 1)

- Problem in transferring trainees to another site and organising workshops:

"I can't see how the site manager can be transferred to another site just for this purpose that would be extremely difficult"

(Respondent 3)

"Unless you get another site, this can be difficult"

(Respondent 4)

iii. Expanding the off-site training provisions

A) Data drawn for analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

- Allow adequate time for the sessions:

> *"Yes, they need to have a day away from work"*
>
> *(Respondent 3)*
>
> *"So that is why the model that we are using is just getting them as a group periodically for a day or two is quite powerful because al least you can identify what were the most common of the gaps, get them to share their knowledge"*
>
> *(Respondent 5)*

- Maintain the amount of paperwork:

> *"The young people that go into the industry are not the brightest; they are not the ones who have done too well"*
>
> *" If we are going to attract these kinds of people we have to maintain the amount of paperwork they have to do"*
>
> *(Respondentl 1)*

iv. Expanding the on-site training provisions

A) Data drawn for analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

- Involve third party/mentor/line manager to assist in the on-site training:

> *"Again talking to different people, companies and different training providers, the level of support given by line managers/trade supervisors are next to none"*
>
> *"If they go down the line they believe they are doing the right things and if there's nobody there to tell them its going wrong, it the end of the training it defeats the whole purpose because they have got it all wrong"*
>
> *"They need a mentor, somebody trained in that area, a qualified person."*
>
> *(Respondent 1)*

(Cont'd)

"I think they need a mentor or a guide. If you can have an experienced coach, maybe the construction manager, where they are working and assisting what the trainees are doing ....."

(Respondent 4)

"Site managers tend to learn more from an experienced manager"

In exemplifying successful training examples:
"....their trainees work with somebody at the site"

(Respondent 3)

B) Challenges in adopting propositions (iii) and (iv):

- Overcoming the inconsistencies in the performance of the different training organisations/colleges during these sessions.

"The other thing is asking how many visits the training provider does. Some do next to none and some are very good at doing a lot"

(Respondent 2)

"If you look at two different providers, I bet you will get one saying that we will do a certain number of site visits whilst the other will say that they will do a different number of site visits"

(Respondent 3)

".....but it such a big contrast between one support to the other"

(Respondent 5)

- Getting the support and cooperation of employers and line managers:

"It would be good but I can guarantee that their contract manager, construction manager or their project manager are going to be busier than the site manager to find the time with the site manager and provide them with assistance"

(Respondent 4)

"But that's the ideal, that why it comes again its importance of why managers to have key skills such as coaching and mentoring"

(Respondent 5)

- Improving the training organisations/colleges' resources to support the on-site training activities:

"More guided learning should be considered. Yes, if it is possible, but I don't think the colleges have the resources"

(Respondent 5)

7.3.3.3 Expanding the training methods:

A) Data drawn for analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

- Get assistance when training special modules:

"The training providers don't have all the skills"

"You may have to bring outsiders and it providers more interesting learning. They may have their facilitators coming in to help, but this will provide them with more ways of learning and learning how others are doing it"

(Respondent 4)

"There is so much information there about what is going on, yet so few of our managers of our managers are not utilizing this facility for their own development but depending on us to deliver the syllabus. It won't work isn't it?"

(Respondent 3)

- Demonstrating how tasks should be undertaken:

"They do need people who demonstrate to the trainees how things should be done prior to their training"

(Respondent 1)

"The people doing their NVQ at a more mature level know more than the people standing in front of them. So you, need a facilitator to get the knowledge out and to structure it"

"I think its getting the people with the right calibre delivering it, which is difficult because of commercial and talent pressures"

(Respondent 5)

- Encourage learning in groups and sharing of best practices:

"Group discussions...., the more people you can have in discussions the better but you have got to have not too many They have got to be properly monitored"

"Definitely, sharing best practice and stuff like that should be useful. I think when you get a group of people asking questions it would greatly help when going to site to collect the evidence. This is something worth doing"

(Respondent 3)

- Maintain lectures at appropriate levels during training:

"Its nothing worse than getting the trainer lecturing the candidate, that's not what we are about"

(Respondent 2)

B) Challenges in adopting the approaches propositioned:

- Maintaining the consistent performance of the facilitators:

"It depends a lot on the training providers and the individual instructors. It is up to the providers to ensure that the quality control is properly managed.

(Respondent 2)

- Limited resources within training organisations/colleges:

"I would agree but it would need more time scales and the resources available to achieve this"

(Respondent 1)

"It depends a lot on the training providers and the individual instructors..... even though they are approved the quality is not there."

(Respondent 5)

7.3.3.4 Expanding the approach to evaluate training

A) Data drawn for analysis:

(Both the CIOB C/DSM and NVQ/SVQ training)

i. Re-establishing the application of knowledge and skills:

- Maintain portfolios as evidence to assess competence but ensure their authenticity and appropriateness:

> *"I think the portfolios are adequate but it needs to be properly monitored"*
> *(Respondent 1)*
>
> *"We need to be looking at technology, producing on-line portfolios, however this needs to be properly authenticated"*
> *(Respondent 2)*

- Where necessary support portfolios with tests and observations:

> *"Test, apart from portfolios, It's got to be anything that is associated to what they supposed to do"*
> *(Respondent 3)*
>
> *"..... our assessor observing the candidate in their everyday job situation. You don't have to be with somebody too long to assess what they are doing. You have to have the facilitator to assess at the site"*
> *(Respondent 4)*

- Focus the assessment on evidence of the actual undertaking of tasks:

> *".... the actual undertaking of the job should ideally what is assessed".*
> *(Respondent 4)*
> *"It is always work based, and all the colleges can do is to measure the actual learning but not the application of it"*
>
> *"The actual knowledge and skills can be measured in terms of what is completed in the colleges... but what would be more significant is the actual application of the knowledge and skill is through the portfolios and actually demonstrating that they have actually done that in the real situation"*
> *(Respondent 5)*

ii Reconsidering the stages when competences should be assessed:

- Observing the assessment in line with the training structure:

> *"It really have to be ongoing, but it's the practical side and within a certain acceptable time frame. That is why if it can be set with some form of performance review, the appraisal procedure it would be ideal"*
> *(Respondent 3)*

(Cont'd)

"It needs to be closely tied to the training structure and the end of the course".

(Respondent 1)

- Assessing the trainee when he is ready:

"You can ask the site manager when he is ready to be assessed"

(Respondent 4)

iii. Including the line manager/trainer to evaluate the training:

- Requesting the employer/line manager to assist the training organisations/colleges to evaluate the training:

"It is only the companies who actually know what the trainee is capable of. The assessor can only get a general feel of what he is capable of"

"You have to get the line manager or the mentor to assist with the assessment. That will ensure the accuracy of the assessment"

(Respondent 4)

"They have to put more money into training and have dedicated people in their organisation to train"

(Respondent 3)

"Yes, it's a partnership isn't it?"

(Respondent 5)

"..... the employer and the manager, in partnership with the college"

"It's again taking managers in organisations to assess. It the use of performance reviews to see how people are getting on and improving, look at the development especially when you are looking at positions at upper management level in projects".

"Adding on to that to ensure the authenticity of the signatures, we gather their work based reports and we check the consistency of the signatures. I thought everybody would have done it that way"

(Respondent 1)

B) Challenges in adopting the approaches propositioned:

- Maintaining the consistency between training organisations and colleges

in evaluating training:

> *"The other thing is asking how many visits the training provider does. Some do next to none and some are very good at doing a lot"*
>
> *(Respondent 3)*
>
> *"There are assessment centres out there where the assessors doesn't even see candidates"*
>
> *"There are also slightly dubious practices going on out there"*
>
> *(Respondent 2)*
>
> *"In my experience, the actual quality of assessment was very poor. From what I have seen some evidence that have been submitted is less than required. It wasn't up to the standard"*
>
> *(Respondent 5)*

- Overcoming the reluctance of employers/line managers to assist the evaluation:

> *"Try these guys... they are not interested. They have other priorities"*
>
> *"It just doesn't happen"*
>
> *(Respondent 2)*
>
> *"Yes, but it's a huge step. It all takes time and resource. So perhaps the only way to do this is, I think, is for them to really understand their whole responsibility for their own development"*
>
> *"The question is that how do we do it? Its an ideal"*
>
> *(Respondent 5)*

7.4 Interpreting data and findings

Placing the analysis within the context of the training within the industry as underlined in Chapter Two, Three, and Four and augmented further with the findings from 7.3.1, testing of Hypothesis 3 was carried out by mapping the analysis of sub-hypothesis 3a and 3b within the framework as shown in Tables 7.4. 1 – 7.4.5. In interpreting data, the central position held by CIOB and NVQ/SVQ within the education and training framework within the industry was considered. Emanating from this, data which

propound initiatives to be taken by these organisations at the industry level were considered as 'within their means'. Therefore, where appropriate within the context of the analysis, they were recognised as intervening variables which links the relationships between the dependent and independent variables. The culminating findings from the analysis of data were drawn as follows:

7.4.1 Sub-Hypothesis 3A:

The research question:

"What are the approaches that can be considered to overcome; (i) the differences in the perceptions on the importance the objectives of training, and (ii) support for the site managers career development needs to make the training more holistic for improving the framework for training site managers?"

The findings that emerge from the sub-hypothesis tests were as follows:

7.4.1.1 The differences in the perceptions on the importance of the objectives of the training needs for the CIOB C/DSM and NVQ/SVQ SS/SM training can be overcome to improve the frameworks for training site managers.

The findings (see Table 7.4.1) support the validity of the proposition that the differences in the perceptions on the importance of the objectives of the training needs for both the CIOB C/DSM and NVQ/SVQ training can be overcome. The approaches propositioned were:

i. reaffirming and communicating the important objectives of training at the industry level with industry representatives;

ii. focusing the initiative at top level management of construction

organisations; and

iii. developing a framework that can guide training organisations/colleges to appreciate the objectives of the training.

Notwithstanding, data drawn from the analysis infers that the above were contingent upon the capability of CIOB and NVQ/SVQ in getting support from:

i. the industry (Intervening Variable 1); and

ii. construction organisations from within the industry (Intervening Variable 2).

7.4.1.2 Support for the site managers' career development needs can be enhanced to improve the frameworks for training site managers.

In comprehension of the difficulty in getting construction organisations to train their site managers and the changing attitude towards considering training site managers more seriously within some segments of the industry (drawn from 7.3.1), the data analysed (see Table 7.4.1) validates that the site managers' career development needs for both the CIOB C/DSM and NVQ/SVQ training can be improved. This was supported by the following propositions:

a. Improving support for the site managers career development needs by:

i. maintaining the current level of recognition; and

ii. considering incorporating other recognised qualifications into the training;

b. Improving support for the training at the industry level by:

i. considering the provision for training to be mandatory;

ii. establishing the training within the CSCS requirements;

SUB-HYPOTHESIS 3A Research Question: "What are the approaches that can be considered to: (i) overcome the differences in perceptions on the importance of the objectives of the training and (ii) improve support the site managers career development needs for improving the framework for training site managers"?								
Propositions drawn from the quantitative data analysis:		**Contextualisation; (Based on typologies/themes for observation)**			**Evaluating: (Support for the propositions)**			**Findings from the hypothesis test:**
					Yes	**No**	**Intervening variable/s**	
1.	Overcoming the differences in the perception of the importance of the objectives of training (Both CIOB C/DSM & NVQ/SVQ training)	A. Data drawn for the analysis:						• Data analysed supports the proposition that the differences in perceptions on the importance of the objectives of the training can be overcome. • However as in this is contingent upon the capability of the training in getting the support from the industry and construction organisations.
		i.	Reaffirming & communicating the important objectives of training at the industry level with industry representatives		*	-	-	
		ii.	Focusing the initiatives at top level management of construction organisations		*	-	-	
		iii.	Develop a framework to guide training organisations/colleges, managers, line managers and site managers to appreciate the objectives of the training		*	-	-	
		B. Elements impinging on the adoption of the approaches i ii and iii:						
			a.	Getting support from the industry and construction organisations			*	
2.	Improving the support for the site managers' career development needs (Both CIOB C/DSM & NVQ/SVQ training)	A. Data drawn for the analysis:						• Data analysed supports the proposition that the support for the site managers career development needs can be improved by adopting the approaches underlined. • However as in (1), this is contingent upon the capability of the training in getting the support from the industry and construction organisations.
		i.	Support for the site managers' professional development:					
			a.	Maintain current level of recognition	*			
			b.	Consider incorporating other qualifications into the training	*			
		ii.	Support for the training at the industry level (Compulsory training days/year, minimum requirement of staff development programme)					
			a.	Provision for training to be made mandatory	*	-	-	
			b.	Establish the training within the CSCS requirements	*	-	-	
			c.	Impress employers their responsibilities for training site managers	*	-	-	
			d.	Consider provision of trained site managers as a contract requirement	*	-	-	
		iii.	Support for training by the employer					
			a.	Allow site managers time for training	*	-	-	
			b.	Emphasise benefits of assisting the site managers' training	*	-	-	
			c.	Tighter requirements to support training	*	-	-	
		B. Elements impinging on the adoption of the approaches i ii and iii:						
			a.	Getting the right people involved in deciding the training structures	-	-	*	
			b.	Getting support from the industry and construction organisations	-	-	*	

Table 7.4.1: Framework for the Qualitative Data Analysis 1

iii. impressing employers on their responsibility for training their site managers; and

iv. considering the introduction of the provision for trained site managers as a contract requirement

c. Improving support for the training by employers by:

i. introducing the provision to allow site managers for training;

ii. emphasising the benefits of assisting site managers training; and

iii. introducing tighter requirements to support training (as in (b) above).

As in proposition 1, it also emerged to infer that there are contingent factors which impact the extent to which the above propositions can be considered. These are:

i. capability of CIOB and NVQ/SVQ in getting the support from the industry (Intervening Variable 1); and

ii. support from construction organisations from within the industry (Intervening Variable 2).

7.4.2 Sub-hypothesis 3b:

The research question:

"How can the training best practice approaches identified be adopted to; (i) improve the accuracy of the Training Needs Analysis (TNA), (ii) expand the training design; (iii) expand the training methods, and; (iv) expand the approach to evaluate the training, to improve the framework for training site managers?"

The propositions that was analysed to test the sub-hypothesis were:

7.4.2.1 The accuracy of training needs analyses (TNAs) can be improved by adopting best practice approaches to improve the frameworks for training site managers.

Data analysed (see Table 7.4.2) for both the CIOB C/DSM and NVQ/SVQ training converge to support the validity that the accuracy of the training TNAs can be improved. This was drawn from the data justification that the following best practice approaches can be adopted within the training provisions:

---

a. Including site managers, line managers, training organisations/colleges in determining TNAs by:

   i. liaising more with site managers, training/line managers and training organisations/colleges;

   ii. encouraging employers to undertake needs analysis of their site managers;

   iii. getting the industry views together; and

   iv. undertaking surveys to identify training needs

However, as in 4.1.1 and 4.2.2, it there were evidence which infer that the extent to which these approaches can be effectively adopted is relative and are contingent upon:

   i. getting the support from the industry (Intervening Variable 1); and

   ii. getting support from construction organisations within the industry (Intervening Variable 2).

SUB-HYPOTHESIS 3B Research Question: How can the training typologies/themes identified be adapted to improve the accuracy of construction training needs analysis (TNAs) and the training methods and processes that are used to evaluate training to improve the future construction training strategies?

Propositions drawn from the quantitative data analysis:			Contextualisation; (Based on typologies/themes for observation)			Evaluating: (Support for the propositions)			Findings from the hypothesis test:
						Yes	No	Intervening variable	
1.	Improving the accuracy of TNAs (Both CIOB C/DSM & NVQ/SVQ training)		A. Data drawn for the analysis:						• Data analysed supports the proposition that the accuracy of the training TNAs can be improved by adopting the approaches propositioned. • But the extent to which the approaches can be adopted is contingent upon the capability of the training in getting the support from the industry and construction organisations.
			i.	Include site managers, line managers/employers and training organisations/colleges in determining TNAs					
				a.	Liaise more with site managers, training/line managers and training organisations/colleges	*	-	-	
				b.	Encourage employers to undertake needs analysis of their site managers	*	-	-	
				c.	Get the views of the industry together	*	-	-	
				d,	Undertake surveys to identify training needs	*	-	-	
			ii.	Consider the frequency of TNAs					
				a.	Reconsider the frequency of TNAs	*	-	-	
			iii.	Consider feedback from previous training evaluation					
				a.	Gather feedback from trainees, training organisations/colleges and employers	*	-	-	
			B. Elements impinging on the adoption of the approaches in i, and ii:						
				a.	Overcoming the challenge of matching the TNAs to the different needs of construction organisations/projects	-	-	*	
				b.	Getting support from the industry and construction organisations	-	-	*	
2.	Improving the training design (Both CIOB C/DSM & NVQ/SVQ training)								• Data analysed supports the proposition that the training design can be improved by improving the training structure through the adoption of the approaches propositioned. • But the extent to which they can be adopted is dependent upon getting support from awarding bodies, getting the right people involved in making decisions on the training structure and overcoming the organisation of the training which is bureaucratic.
i.	Improving the training structure		A. Data drawn for the analysis:						
	A.	CIOB C/DSM training	i.	Maintain the current performance assessment based on the NVQ framework		*	-	-	
			ii.	Maintain the current structured and modular structure but reconsider the timing and training schedule		*	-	-	
	B.	NVS/SVQ training	i.	Maintain the current approach to assess performance and the entry qualifications		*	-	-	
			ii.	Expand the off-site training provisions		*	-	-	
	C	Both CIOB C/DSM & NVQ/SVQ training	i.	Redesign the training content to accommodate changing construction practices			-	-	
			ii.	Stress more human skills within the training modules		*	-	-	
			B. Elements impinging on the approaches propositioned in 2A, B and C:						
				a.	Getting the support from awarding bodies	-	-	*	
				b.	Getting the right people to make decisions on the training structure	-	-	*	
				c	Getting round the organisation of the training which can be bureaucratic	-	-	*	

Table 7.4.2: Framework for the Qualitative Data Analysis 2

7.4.2.2 The training designs can be improved by adopting training best practice approaches to improve the frameworks for training site managers.

The best practice approaches propositioned investigated were as follows:

a. Improving the structure of the training:

The analysis of data (see Table 7.4.2) supports the validity that both the CIOB C/DSM and the NVQ/SVQ training structures can be improved. The propositions that suggest that this can be achieved are by considering the following approaches:

CIOB C/DSM training:

i. maintaining the current approach to assess performance based on the NVQ/SVQ framework; and

ii. whilst maintaining the current structured and modular approach, but reconsider the timing and the schedule of the training.

NVQ/SVQ:

i. maintaining the current approach to assess performance; and

ii. expanding the off-site training provisions (see 7.4.2.2d)

For CIOB C/DSM and NVQ/SVQ SS/SM training:

i. redesigning the training to accommodate changing construction practices; and

ii. stressing more human skills within the training modules;

Likewise, the analysis also found data which infer that the extents to which the approaches can be adopted within the training schemes are constrained by the combination of the following influencing factors:

i. the capability of getting support from awarding bodies (Intervening Variable 1);

ii. getting the right people to be involved in making decisions on the training structures (Intervening Variable 2); and

iii. overcoming the organisation of the training which can be bureaucratic (Intervening Variable 3).

b. Improving the adaptability of the training to the project operations and project management styles:

Whilst it was propositioned that both the CIOB C/DSM and the NVQ/SVQ training structures can be improved to be more adaptive to the project operation and project management styles, the analysis (see Table 7.4.3) found contradictions within the data. There were data analysed which propound that the adaptability of the training can be improved through;

i. provision of workshops in cases where the site cannot support the training; and

ii. trainees can be allowed to move from project sites during the training

Conversely, this was challenged by the view that:

i. the generic training designs are already adequate to accommodate different project operations and project management styles, and

iii. the overriding problem of transferring the trainee to another site or to the workshops especially for those who come from small and medium-sized

SUB-HYPOTHESIS 3B Research Question: How can the training best provide approaches/techniques directed to (i) improve the accuracy of the training need analysis, (ii) expand the training methods, and (iii) expand the approaches/techniques to improve the framework for training delivery?						
Propositions drawn from the quantitative data analysis:		**Contextualisation; (Based on typologies/themes for observation)**	**Evaluating: (Support for the propositions)**			**Findings from the hypothesis test:**
			Yes	No	Intervening variable	
ii.	Improving the adaptability of the training to the project operations and project management style (Both CIOB C/DSM & NVQ/SVQ training)	A. Data drawn for the analysis:				• Proposition cannot be confirmed. The data analysed data does not fully support the proposition that adaptability of the training can be improved by considering the approaches.
		i. Provision of workshops for trainees in cases when the site cannot support the training	*	-	-	
		ii. Allowing the trainees to move to different project sites during the training	*	-	-	
		iii. The generic training designs are already adequate to accommodate different project operations and project management styles	-	*	-	
		iv. Problems in transferring trainees to other sites and to workshops	-	*	-	
		B. Elements impinging on the adoption of the approaches:				
		Nil	-	-	-	
iii.	Expanding the off-site training provisions (Both CIOB C/DSM & NVQ/SVQ training)	A. Data drawn for the analysis:				• Data analysed supports the proposition that the off-site training provisions can be expanded by considering the approaches propositioned.
		i. Allow adequate time for the sessions	*	-	-	
		ii. Reduce the amount of paperwork	*	-	-	
iv.	Expanding the on-site training provisions (Both CIOB C/DSM & NVQ/SVQ training)	A. Data drawn for the analysis:				• Data analysed supports the proposition that the on-site training provisions can be expanded by considering the approaches propositioned. • However, the extent to which this can be achieved this is dependent upon the ability of the training to overcome the factors that impinge the adoption of the approaches.
		i. Involve third party/mentor/line manager to assist the on-site training	*	-	-	
		B. Elements impinging on the adoption of propositions iii. &iv.				
		i. Overcoming the inconsistencies in the performance of the different training organisations/colleges during the sessions	-	-	*	
		ii. Getting the support and cooperation of employers and line managers	-	-	*	
		iii. Improving the training organisations'/colleges' resources to support the training activities	-	-	*	

Table 7.4.3: Framework for the Qualitative Data Analysis 3

construction organisations or operating in small construction projects would render the whole initiative impractical.

As such, it was concluded that it was not conclusive to suggest that the approaches propositioned can be considered to improving the training provisions.

c. Expanding the off-site training provisions:

The validity of the proposition that the off-site training provisions of the CIOB C/DSM and the NVQ/SVQ training can be expanded was verified by data findings which suggest that training provisions can be expanded by:

i. allowing adequate time for the sessions; and

ii. maintaining the amount of paperwork at an optimum level.

There was no contrary data or intervening variable found from the analysis.

d. Expanding the on-site training provisions

There were consistent data validating the proposition that the getting a third party, mentors or line managers to assist would expand both the CIOB C/DSM and the NVQ/SVQ on-site training provisions. However, it was also identified that there were data which inferred that the extent to which this approach would be significant would be dependent upon:

i. overcoming the inconsistencies in the performance rendered by training organisations/colleges during these sessions (Intervening Variable 1);

ii. getting the support and cooperation of employers and line managers (Intervening Variable 2); and

iii. improving some of the training organisations/colleges' resources to support the training activities (Intervening variable 3).

7.4.2.3 The training can be improved by adopting the best practice training methods to improve the frameworks for training site managers.

(Group discussions, lectures (for NVQ/SVQ SS/SM training) and the combined use of training methods)

Data analysed for both the CIOB C/DSM and NVQ/SVQ (see Table 7.4.4) training supports the validity of this proposition. Data supporting this proposition are the following approaches which can be adopted within the current training:

i. demonstrating how tasks should be undertaken;
ii. encouraging more learning in groups and sharing best practices;
iii. reducing lectures during these sessions; and
iv. getting assistance when training special modules.

Two key factors (intervening variables) were found to influence the extent to which these approaches would be significant, they are:

i. maintaining the consistency of the performance of the facilitators (Intervening Variable 1); and
ii. overcoming the limited resources within training organisations/colleges.

7.4.2.4 The training evaluations can be improved by adopting the best practice training evaluation approaches to improve the frameworks for training site managers.

The validity of the proposition for both the training were verified from the findings (see Table 7.4.4) that the best practice approaches propositioned to improve the training

Propositions drawn from the quantitative data analysis:		Contextualisation; (Based on typologies/themes for observation)		Evaluating: (Support for the propositions)			Findings from the hypothesis test:
				Yes	No	Intervening variable	
3.	Expanding the training methods by adopting more case studies and group discussions. (Both CIOB C/DSM & NVQ/SVQ training)	A: Data drawn for the analysis					• The analysis supports the proposition that more case studies and group discussions can be encouraged by adopted the approaches propositioned. • Conversely, the extent to which the approaches can be effective is contingent upon the training maintaining the performance of the facilitators and training organisations/colleges that lack certain resources.
		i.	Demonstrating how tasks should be undertaken	*	-	-	
		ii.	Encourage more learning in groups and sharing best practices	*	-	-	
		iii.	Reduce lectures	*	-	-	
		iv.	Get assistance when training special modules	*	-	-	
		B: Elements impinging on the adoption of the approaches i, ii, iii and iv					
		i.	Maintaining the consistent performance of facilitators	-	-	*	
		ii.	The limited resources within training organisations/colleges.	-	-	*	
4.	Expanding the approach to evaluate training (Both CIOB C/DSM & NVQ/SVQ training)						
i.	Re-establish the application of knowledge and skills	A: Data drawn for the analysis					• The analysis supports the proposition that approaches analysed can be adopted for expanding the training evaluation. • But, this is contingent upon the ability of the training to maintain the consistent evaluation practices by training organisations/colleges and overcoming the reluctance of employers/line managers to assist the evaluation.
		i.	Maintain portfolios as evidence to assess competence but ensure their authenticity and appropriateness	*	-	-	
		ii.	Where necessary support portfolios with tests and observations	*	-	-	
		iii.	Focus the assessment on evidence of the actual undertaking of tasks	*	-	-	
ii.	Reconsidering the stages when competences should be assessed	i.	Observe the assessment in line with the training structure	*	-	-	
		ii.	Assessing the trainee when he is ready	*	-	-	
iii.	Including the line manager/trainer to evaluate the training	i.	Requesting the employer/line manager to assist the training organisations/colleges to evaluate the training	*	-	-	
		B: Elements impinging on the adoption of the approaches 4i, 4ii and 4iii					
		i.	Maintaining the consistency between training organisations/colleges in evaluating training	-	-	*	
		iii.	Overcoming the reluctance of employers/line managers to assist the evaluation	-	-	*	

Table 7.4.4: Framework for the Qualitative Data Analysis 4

evaluations through the followings:

a. Re-establishing the application of knowledge and skills by:

   i. maintaining portfolios as evidence to assess competency but their authenticity and appropriateness must be ensured;

   ii. where necessary, portfolios are supported with tests and observations; and

   iii. focusing the assessment on evidence of actual undertaking of tasks.

---

b. Reconsidering the stages when the training should be evaluated by:

   i. carrying out the evaluation in line with the structure of the training; and

   ii. by asking the trainee when he is ready to be assessed.

c. Including the line manager/trainer to evaluate the training by:

   i. requesting the employer/line manager to assist the training organisation/college to evaluate the training.

However, it was inferred from data analysed that the approaches propositioned (a-c) are contingent on the following:

   i. maintaining the consistency of evaluations between training organisations/colleges (Intervening Variable 1); and

   ii. overcoming the reluctance of employers/line managers to assist the evaluation (Intervening Variable 2)

7.4.3 Findings emergent from the analyses

The findings that emerge supports the hypothesis (Hypothesis 3) that an improved

framework which was based on the best practices for training site managers can be developed within a framework which accommodates the improvements within the site management training provisions (as propositioned by Hypothesis 1 and 2). In achieving this, it confirms the answer to the enquiry underlined in sub-hypothesis 3a that ***better understanding and consideration for the site managers' holistic training needs was possible and would improve the current training provisions. This would entail significant expansion and adjustments to the current provisions without obscuring any of the existing provisions.***

Similarly, it also confirms the query in sub-hypothesis 3b that the ***adoption of the best practice approaches is possible. This would also necessitate expansion and adjustments to the current training approaches. There was no evidence of any negative consequence to the merits of the current training provisions to accommodate the improvements.***

To verify and confirm the findings, it was decided to seek feedback from key parties who have been directly involved with the design and implementation of the training at the industry level. The approaches culminating from the findings drawn were summarised for the verification as follows:

A. <u>Improving the provisions for meeting the holistic needs of the site managers training.</u>

The approaches identified to enable this were drawn as follows:

i. A common appreciation of the important objectives of the training by the key parties to the training (i.e., the site managers, employers and training organisations/colleges and training providers (CIOB and NVQ/SVQ)) is a pre-

requisite of effective training. The different perceptions of the important objectives of the training found between the key parties to the training (i.e., site managers, employers and the trainers from the training organisations/colleges) from the analysis needs to be overcome and this can be achieved by considering:

a. reaffirming and communicating the important objectives of the training to these parties at the industry level; and

b. as the industry is client led; this initiative must be focused at the top level management of construction organisations.

ii. Improve the support for the site managers career development needs. The approaches identified to achieve this were:

a. Expand the training provisions to better support for the site managers' professional development and continuing education/CPD needs by:

- maintaining the current level of recognition (i.e., at ACIOB and NVQ/SVQ 3 and 4 levels); and
- considering incorporating other qualifications (such as Institute of Management qualification etc.) into the training to equip site managers with more management knowledge and skills. This would augment the site managers' future career development potential.

b. The difficulty of getting support from employers to train their site managers have been a persisting problem and persuasive approaches to promote training have not proven to be effective. A more radical approach were propositioned as follows:

- provisions for adopting the training within the Construction Skills Certification Scheme (CSCS) requirements;

- if possible, introduce the provisions for minimum training days/year and/or the consideration for the training as a minimum requirement of staff development programme requirements at the industry level;
- impressing employers their responsibility for training site managers; and
- consider the introducing the provision of trained site managers as a construction contract requirement.

It was acknowledged that to facilitate these approaches, it is fundamental for the training providers to consider acquiring the support of the industry and construction organisations to underpin the strategy, but this would be a difficult challenge.

B. Improve the current training provisions with the adoption of best practice training approaches within its processes

To improve, the following approaches were underlined for consideration:

i. Improve the accuracy of Training Needs Analysis (TNA) through the followings:

a. Adopt a more 'holistic' approach in determining TNAs and it is important for site mangers, line managers/employers and training organisations/colleges to be more involved during this process. It was suggested that this can be achieved by the training providers by:

- establishing more liaisons with site managers, line managers/employers and training organisations/colleges;
- encouraging employers to undertake needs analysis of their site managers; and
- getting the views of the industry together

b. Reviewing the frequency of TNAs

c. Considering feedback from previous training evaluations

To achieve this, the challenge of matching TNAs with the different needs of construction organisations from within the industry needs to be overcome. Therefore more research in this area was deemed necessary together with support from the key parties related to the training to augment the initiative.

ii. It was identified that the training design needs to be expanded. The key elements of the training design which needs to be expanded are:

a. Improve the training structures by:

- redesigning the training to accommodate changing construction practices; and
- emphasising more human management skills within the training modules;

(For the CIOB C/DSM training)

- maintaining the current performance assessment method based on the NVQ framework; and
- whilst maintaining the current structured and modular training, re-consider the timing and scheduling of the training as the current provision was found to be too demanding and unattractive.

(For the NVQ/SVQ training)

- maintaining the current the entry requirements (apprentice trainees must have at least NVQ Level 2 qualifications, employed and have has at least two years experience in site supervision/management); and
- expand the off-site training provisions (see (b) below)

In enabling this, it is propositioned for the training providers to underpin these approaches with support from awarding bodies, getting the right parties to be involved in deciding the training designs; and reduce the bureaucracy within some of the training organisation to ensure that the whole exercise can be undertaken more effectively.

b. Expand the off-site training provisions by:

- allowing more time for the sessions (suggested one-day for each sessions); and
- with the current trainees who mostly lack academic acumen, reduce the amount of paperwork.

c. Expand the on-site training provisions by persuading trainers/mentor/line managers to assist more with the training.

For the approaches propositioned in (b) and (c) to be effective, it is suggested that the training providers needs to:

- overcome the inconsistencies between the trainers/facilitators from the different training organisations/colleges;
- get the support and cooperation from employers and line managers; and
- ensure that training organisations/colleges have adequate resources for the training.

iii. Expand the training methods by adopting more case studies and group discussions by:

- more demonstrations on how the actual tasks should be done;
- encouraging more learning in groups and sharing best practices;
- maintain lectures at appropriate levels during the training sessions;

and

- getting assistance when training special modules.

In implementing this it is important for training providers to ensure that the consistent performance of facilitators can be maintained, and that they have adequate knowledge and resources for these activities.

iv. Expand the training evaluation by the following approaches:

a. Re-establish the application of skills and knowledge by:

- maintaining portfolios evidence to assess competence and ensuring their authenticity and appropriateness;
- including tests and observations to support portfolios; and
- assessing based on evidence of the actual undertaking of tasks.

b. Reconsider the stages when competences should be assessed by:

- observing the assessment with the training structure; and
- assessing the trainee when he is ready

c. Get the assistance of employers and line managers to evaluate the training.

To achieve a, b and c, it is important for the CIOB and NVQ/SVQ to ensure that the consistency of the approach to evaluate the training between training organisations/colleges can be maintained and the assistance of employers/line managers to assist the evaluation can be acquired.

7.4.4 Confirming the best practice training framework

Three key parties who are/have been involved with the site management training provisions at the industry level were approach for their views to verify the best practice framework and the validity of the approaches underlined for the improvements. The

first verifier is the Head of Training of a member of MCG organisation who is also a key member of the one of the CITB-Construction Skills committees at the industry level, and the second is the CIOB Education and Training Manager. The third is the former CIOB Director for Education and Training who is now a senior academic currently leading the postgraduate construction programme in a local university. They were selected on the basis of their vast experience and their in-depth knowledge on site management training at the industry level for over 10 years.

Each was provided with a copy of a report which presented the research findings outlining the best practice framework. They were kindly requested to provide their views on the framework and comments on the practicality or extent to which the approaches for improvement can be adopted. Their key feedback was as follows:

7.4.4.1 Feedback

Verifier 1:

- The CIOB and NVQ schemes examined in this research have been around for a long period and are very traditional in their approach. As pointed out by your research, there is certainly room for improvement in terms of bringing them up to date to reflect the latest construction technique, conditions of contract and procurement routes. There is scope for improving the current training provisions, although it will be difficult to find a solution that meets all needs.

- Having said that there will be common elements and I think that the courses you have focused on in your research developed along the objectives underlined will find an audience from throughout the industry - as long as they are seen as a foundation from which some site managers will branch out into other training to develop their careers further.

- It must also recognise that the needs of site managers throughout the construction

industry will be also influenced by the size of organisation for whom they work, the type of work they are engaged in, their level of responsibility and their career ambition. Similarly, the assumption that training needs analysis must be matched with the different needs of organisations within the industry is indeed very accurate but this is not easy to achieve. It must be recognised that the needs of the smaller SMEs can be very different form those of the major contractors. It is these companies though that would find the CIOB and NVQ programmes of most use. There should also be flexibility to allow larger companies to run their own in-hose programmes to the same standard. I would expect CITB Construction Skills to take a lead in this, with strong support from the Government, as the major client in the sector.

- The requirement by the Major Contractors Group that all workers on their sites must possess a CSCS card means that there is much greater interest in vocational qualifications, as this is the only route open to many to qualify for a card. Hence there has been a shift from following a training route in order to develop skills and become a better manager, to completing a qualification in order to meet an external requirement and enhance employment prospects. Thus the latter is creating a demand for a quick and easy "training solution" rather than one that is based upon the competencies required to be an effective manager.

- CSCS has in effect introduced a "requirement" for site managers to be appropriately qualified, although this has only been written into a few forms of contract. It is being enforced to some extent by the Major Contractors Group and some major clients – but notably not the Government! However, it is the qualification that is being enforced not the training. It should also be noted that the CIOB Certificate and Diploma have no place in the CSCS scheme, which could reduce the number of site managers following this route unless they use it as an entry into the NVQ Level 4. Your suggestion for the consideration of the training within the CSCS, with the improvements suggested, can be useful.

- The other issue with the NVQ approach is that it does not provide training as such and merely assesses the output and knowledge of an individual against the NVQ standard. The propositions suggested by the research would certainly assist in this context. As I see it, it not a developmental tool but merely an assessment process to verify the

competence of an individual It has to run alongside a separate development programme that identifies and address training needs, which may come out of the assessment process.

- The use of case studies and practical demonstrations is to be encouraged but would need cooperation between training providers and industry to develop these so that they are relevant, current and appropriate.

- Evaluation is an old chestnut and starts from examining the reasons why the training was started in the first place – for genuine career development or simply to get a qualification and satisfy external requirements such as CSCS. I agree that it should be better but there is no simple answer.

- There is certainly scope for redesigning the training courses to accommodate changes in construction practice that have taken place over recent years. It is also true that the softer management skills have also been neglected, particularly at this level of management. The training must reflect changes in construction practice that have taken place in recent years, and would benefit from the introduction of softer human management skills. I think that care will need to be taken over what specifically is introduced and how much. Adding too much into the training courses can reduce their appeal to some.

- There is a need to ensure that the training courses do match the requirements of the site managers and this will need regular dialogue between the site managers themselves, their employers and the training providers. There has been a tendency in the past for providers to produce courses that suit their academic requirements but show little practical understanding of what is actually needed by industry. I see that the role of the newly formed Sector Skills Agency – CITB Construction Skills will be crucial in brokering this relationship between industry as the customers, the providers of training and the Government as funders.

- I don't think that that the idea of compulsory training days could be enforced very easily. Larger companies seem to take training very seriously at all levels, however it is in the bulk of the industry where there is the problem – how to reach the SME's who

typically employ less than 10 people. The creation of a preferred supplier list has enabled the larger companies to monitor the training being carried out by the subcontractors and in assessing them for future work.

- Our own experience has identified problems with the design and delivery of these two options:

- *The CIOB Certificate and Diploma are being offered at fewer and fewer centres, which puts huge constraints on their availability to staff who want to complete these courses but who do not live near to one of the centres that offer them. They also tend to be run on fixed times, usually one afternoon and evening per week, which can also present difficulties to a mobile workforce. It would be good to see some flexibility in delivery, possible enabling candidates to attend more than one centre according to their work location. The introduction of more distance learning, with occasional attendance at more formal lectures / workshops would also be beneficial.*

- *The problems with the NVQ stem from the bureaucracy associated with the assessment process, inconsistencies between assessors, and the lack of assessors in the first place. The situation will get worse as more managers realise that it is there only route to qualifying for a CSCS card. It is easy to throw the problem back at companies and say that we must provide more internal assessors. This is difficult to achieve in practice, unless a company is prepared to employ full time assessors [as we have] and can find them.*

Summary

I would agree with the general conclusion of the research that the training provision for site managers would benefit from improvement underlined especially in terms of the content, method of delivery, means of assessment and evaluation by employers. The training must reflect changes in construction practice that have taken place in recent years, and would benefit from the introduction of softer human management skills. However, it must also recognise the differing needs of site managers throughout the construction industry, which would be influenced by the variables mentioned earlier. The effect of needing a qualification to achieve a CSCS card must not be underestimated, and whilst this will raise the standard of site managers over the short term it must not compromise their overall development through taking the "easy"

option.

I thought that in places the research findings stated the obvious and I would have expected some firmer recommendations on what should be done to improve the existing courses. There is a need for further work in order to achieve the improvement that has been identified as being necessary by your research, and this will require input from employers, clients, site managers themselves, training providers, CITB Construction Skills and the Government.

Verifier 2:

- For the CIOB C/DSM training, the importance of a common perception of the objectives of training has been reaffirmed with the QCA accreditation. Therefore, there is a more common appreciation of the skills and knowledge requirements, which the industry through the CIC has agreed. What we have done now is mapping ourselves against the common training objectives and the common competencies. They are part of the industry standard now.

- About the consideration of other qualifications, that is something that the CIOB cannot do. The Institute of Management for example is a general management qualification. It is construction management that the site managers are after. We are the leaders in the field of construction management, so effectively we have the management qualification there. I would agree that it is a good idea to incorporate other qualification, but then this will relate to the training needs assessment. Our training is looking at the people at the bottom of the ladder at the moment, so effectively we provide them with a strong basis for them to springboard from if they are the types that can springboard.

- Considering adopting the training within the CSCS requirements. Since we started we have done an analysis of our position and we have mapped it against the NVQ, and we now have the approval for NVQ to accept our course as an education cum training. The CIOB course was designed to enable young people to achieve their NVQ faster. The NVQ is easy if you have the experience and knowledge. Our course provides those without the knowledge with the knowledge required. However, with the limitation of the

NVQ training as a course especially at Level 4, I totally agree that if the site managers cannot be encouraged to take up the CIOB training, it is the industry that is going to lose out.

- The provision for the consideration for compulsory training days/year is something that can be done by the CIC, CITB and perhaps the MCG or the Construction Federation. Every company should have a commitment towards training. Indeed I would agree that this would be difficult to implement with the large number of small companies within the industry. For this, I think it would need a government initiative. It is a good idea, but it is something that should be worked towards that can materialise in future. One way forward for the smaller construction organisations is to focus this through their clients and consultants.

- The industry has done a major TNA for OSAT but there is certainly in scope for expansion. But if you want every contractor within the industry to do it, there has got to be an industry change. For CIOB, we have undertaken initiatives to have more liaisons with the industry and colleges and we have just set up an industry liaison group.

- To expand the training design especially for areas where there are few centres running the training, learning on-line and distance learning provisions are initiatives that we can consider and I believe distance learning is going to improve to our training provision. We are certainly encouraging case-studies and group discussions in our training. We have considered the off-site training sessions where the trainees come together as the platform for sharing experiences and best practices. But I doubt this can be case for NVQ training because there are no off-site training provisions for the NVQ level 4. I would totally agree that if the NVQ is to be perceived as a training tool, it needs to have more off-site training provisions.

- We are always trying to maintain the consistency and quality of colleges and organisations providing our training, and to make sure they have adequate resources. What we try to avoid is training provided by our colleges to be too identical because we would like to encourage a certain level of variety to the training. Interesting enough for our training, we don't actually observe module delivery but we have incorporated that

in our assessment regime. Our external verifies will be asked in the first instance to try to look as one module being delivered to get an idea of what happens, but in future this will be compulsory.

- What we do with our course are case studies, learning in groups and sharing best practice. This has been one of the strength of our course.

- I totally agree to the approaches propositioned to improve the training evaluations.

Summary:

I appreciate that the research is a broad subject. The provisions for training site managers' needs to be established within a certain framework, and this needs to be precisely conceptualised before the specifics for improving the provisions can be considered. I felt that the framework developed by the research has provided a good basis for this. As a general model it has provided a good overview of the structure on how the training can be improved. The extent to which the approaches propositioned can be applied is suggested to be a subject of further study. There has been no research to frame the training of site managers on best practice approaches and this was what the research has achieved.

Verifier 3:

- With what have been set out by the research, I am of the opinion that the following needs to also be considered:

- The NVQ was developed by the industry to set the industry standards for the competence of managers in construction at various levels and that includes Levels 3, 4 and 5. They are primarily looking at the standards at what people are supposed to be able to achieve within their job function. The CIOB SMETS was actually designed to provide underpinning knowledge to the NVQ 3 in Site Supervision and NVQ4 in Site Management. When the CIOB SMETS training was first developed, it was developed to support as the first port of call for people who have moved from the trade background into site management, that they can get some sort of education and lead them to a professional membership scheme. The objective still holds valid to date because that is what it does.

- What you have is a joined thinking that the CIOB scheme and the CIOB scheme were supposed to complement each other. Site managers need to prove their competence through NVQ and what they are lacking in training was supposed to be catered by the CIOB scheme. There was an attempt to make the thinking between the underpinning knowledge and the competence assessment joined together. By linking that base training together, as an aspiring professional, what site managers may be able to do is to look at the way CIOB promotes personal development through appraisal systems and through the CPD system.

- The thing that makes the NVQ system so strong is the actual evidence that is produce. It is the real evidence of real work undertaking in real work environment. It enables the site manager to sit down and examine what he/she do, and understand it better. Once the site manager have reflected what he is trying to achieve, then he is in a position to say that he now understand what he should be doing, He now think he do that and now he could do it better, because he fully understand. It needs training to do the job, and I believe that the CIOB scheme should be able to support this.

- Linking the CIOB scheme to the CSCS that has to be the answer if the industry is to ensure that the site managers are trained. Without this, the fundamental for getting site managers trained could be lost.

- Enhancing the training provisions through on-line modes can be considered but it must be realised that those courses are simulations, they are not real. You can provide underpinning knowledge through that but not job competence. The competence comes from the ability to do something.

- It is important to understand that within the context of training the industry's site managers, you cannot provide a holistic training system for everybody because I don't think you can.

- No one training can provide that holistic training for everybody; it cannot be all things for all people. What it will do is provide the general underpinning, firstly of the knowledge and understanding required, and secondly and the competences that you

would expect to be common within the background of any site manager.

Summary:

- I totally agree with the whole of what you have outlined in your research to improve the training provisions and the best practice training framework. There isn't a fundamental flaw. One of the things that I found very useful from your research was the use of the hypotheses, which identifies the key elements for improving the training provisions.

The tasks and roles of site managers vary considerably. My anchor for understanding this is the NVQ standards because they give me a matrix of what somebody should be capable of doing. If you distil that down you should get a job description of what a site manager should be able to do. If you call at two different site managers from two different companies, their experience will not be able to fill the whole of that grid. But the gaps wouldn't be consistent but will be different because different site managers from different companies do different things. What is really good about your research is the element of the training needs analysis which underlines the approach to identify these gaps accurately.

7.4.5 Feedback analysis

The feedback confirms that the best practice framework and approaches identified would augment and improve the training of the site managers. This was exemplified by the following views:

> *"I would agree with the general conclusion of the research that the training provision for site managers would benefit from improvement underlined especially in terms of the content, method of delivery, means of assessment and evaluation by employers"*
>
> *(Verifier 1)*
>
> *"The provisions for training site managers' needs to be established within a certain framework, and this needs to be precisely conceptualised before the*

specifics for improving the provisions can be considered. I felt that the framework developed by the research has provided a good basis for this"

(Verifier 2)

"I totally agree with the whole of what you have outlined in your research to improve the training provisions and the best practice training framework. There isn't a fundamental flaw"

(Verifier 3)

Whilst clearly there was support for the best practice framework and the viability of improving the current training provisions by strengthening the existing training mechanisms with the approaches underlined, broader points emerge to suggest the consideration of the extent to which the approaches identified can be effectively adopted. The standpoint of the research in reflecting the issues highlighted is as follows:

- The best practice framework was developed to provide a strategic view of the provisions for training of site managers. It is designed to aid informed judgement of the provisions for training site managers, but not to be prescriptive or to encourage the mechanistic adoption of the approaches identified. It was not meant to be conceived as all things for all people. It is focussed to provide a holistic underpinning understanding of the provisions which are already in place together with the improvements that would be necessary. Further work and research is necessary to refine the approaches underlined for the improvements for both the CIOB C/DSM and the NVQ/SVQ SS/SM training schemes.

- A clear understanding of the difference between training needs and development needs is necessary for appraising the effectiveness or adequacy of the training

provisions. Training needs to be conceived as an integral part of development and will not work for organisations with little appreciation of training or developing their site managers. The site managers' training needs drawn from training best practice have been empirically verified and some of the concern highlighted by the verifications tends to relate to the site managers' development needs. There is certainly more scope for work to be done to establish the variables and their impact on the site managers' development needs to augment the improvements underlined by the research.

- Similarly, there is more work in need to be done to get the industry together to support the training of site managers with the approaches identified. Initiatives to get the industry together to promote more training have been mooted and are ongoing. Difficulties are expected especially in getting the smaller construction organisations to respond to the improvement initiatives. Notwithstanding, the research has provided the perspective for the improvements to be considered in parallel with the initiatives.

7.5 CHAPTER SUMMARY

The chapter have presented the qualitative analysis of data and findings. The validity of Hypothesis 3 which underlines the best practice approaches for improving the training provisions was confirmed. In achieving this, the approach on how the data drawn from the findings of the quantitative research findings, approaches adopted for collecting and analysing data, the techniques adopted to integrate the quantitative data into the analysis and the concepts underpinning the research process were critically discussed. The justification for adopting certain selected procedures within the processes observed to

maintain the research validity and reliability was also underlined.

The best practice approaches propositioned for improving the training provisions emergent from the analysis were verified and confirmed. The critical assessment of the views and comments from the verification was considered to underline the scope to which improvements to the training of site managers can be achieved. Chapter Eight concludes the research work by reaffirming the whole research process, the best practice training framework identified by the research for training site managers, the discussions on the research findings and areas for further work/research.

CHAPTER EIGHT
Research Summary & Conclusions

8.1 AIMS OF THE CHAPTER

This is the final chapter of the thesis. The summary of the research work covering all the phases of the research process, and the research findings were presented to underline the achievement of the research aims and objectives. The research findings were discussed together with the applicability and scope of the best practice framework identified by the research. Areas for further work and research to augment the study on training of the industry's site managers are proposed. The research concludes by reaffirming its views on the provisions for training site managers.

8.2. SUMMARY OF THE RESEARCH

8.2.1 The research process

Three major areas of enquiry were set out at the onset by the research. These were to identify:

i. the approaches that can provide better understanding of the holistic training needs of site managers;

ii. the variables and their impact on the training needs of site managers; and

iii. the provisions that need to be introduced to improve the existing training framework for training the industry's construction site managers.

In enabling this, the research was structured as follows:

i. Comprehensive and systematic review of the research literature

This was synthesised in Chapters Two, Three and Four. Chapter Two presented the nature of the UK construction industry, issues relating to the industry's workforce and

their training to establish the context of the research. The nature of construction projects were underlined to provide understanding of the setting within which site managers operates. Site management, the significant role and contribution of site managers to construction projects was discussed and the definition of site managers for the research was established.

Having contextualised this, Chapter Three presented the training and training best practice. This encompassed the discussions that underlined the literature and theories related to human and organisational development to underpin the understanding of training. The definitions of education, training, development and learning were underlined together with best practice and training best practice. The fundamental concepts which have contributed to the growing importance of application of training best practice were underlined and the framework of training best practice was established for the research.

Chapter Four presented the critical analysis of the training provisions offered by the CIOB C/DSM and the NVQ/SVQ SS/SM training. The key elements of the training provisions were discussed and the factors which influence their design, delivery and outcomes were outlined. The validity and opportunities of their provisions in meeting the training needs of site managers were critically discussed. The justification why more research is needed to investigate and improve the training provisions was presented.

ii. Research design and methodology

This was presented in Chapter Five. The approach selected to develop the research activities and operationalise the research were critically discussed. The research

theoretical framework was conceptualised and the research problem, research questions and the research variables were presented. The approaches adopted to achieve validity and reliability for the research were underlined, and the justification for adopting quantitative and qualitative research approaches for the research was critically discussed.

The three main hypotheses and sub-hypotheses developed for the research investigations, research model and the pilot research study was also presented.

iii. Quantitative research investigation

Having underlined the importance of approaching the research with quantitative and qualitative approaches, Chapter Six presents the quantitative data analysis and findings of the research. The validity of Hypothesis 1 and 2 was tested. The significance of adopting the propositions within the sub-hypotheses for improving the training provisions was identified.

The data collection and analysis techniques were discussed in detail, and the justification for the application of certain procedures and statistical tools were also underlined. The validity of Hypothesis 1 and 2 were tested and confirmed. The emergent propositions for improving the training provisions were underlined and adopted for the qualitative research investigation investigations.

iv. Qualitative research investigation.

Chapter Seven presented the qualitative analysis of data and findings. The final research hypothesis i.e., Hypothesis 3 was tested and confirmed. The process of developing Hypothesis 3 from the quantitative research findings was critically

discussed. The data collection and analysis, and the rationale for adopting the procedures to derive at the research findings were presented. The emergent findings for improving the training of site managers were validated and drawn to establish the best practice framework for training site managers.

8.2.2 Summary of the main findings

In meeting aim to identify an improved operational framework for training site managers, the three objectives set by the research was achieved as follows:

i. Identification of the variables and their impact on the site managers' training needs.

It was identified that site managers perform a range of common roles and tasks in their job. There were variations to the roles and tasks performed, and this was identified to be influenced by the type and size of the employing organisation, the type of project undertaken and the site managers' background (experience and career path into site management). Whilst the initial conception was these variables would have a significant impact on their training needs, the in-depth investigation on the concepts of training and training best practice which followed underlines the need to understand the site managers training more holistically.

Precisely, for training to be effective, it must not only meet the need of the site managers' job, but must also consider meeting the needs of the site manager's career development, the organisation and project needs as well as meeting the requirements of the industry.

The research investigations, which benchmarked the site managers' training needs against these elements, identified that in the main the site managers have training needs which are common. The variables have no significant impact on their training needs. It was therefore conceived that site management training schemes offered at the industry level, if effectively designed can meet the site managers' training needs.

ii. Identification of the modifications and improvements to the existing training provisions

The provisions for training site managers at the industry level were investigated and it was identified that this was offered by the CIOB C/DSM and the NVQ/SVQ SS/SM training schemes. The framework and features of the training schemes were discussed in Chapter 4 and summarised in Table 4.4. The key elements of the schemes are their provisions which were designed to offer:

i. job-related and competency-based training;
ii. modular-based training where training units are cumulatively available;
iii. flexible training where trainees can develop at appropriate pace;
iv. training linked to a recognised award such as a certificate/diploma; and
v. training linked to the site managers' medium to long-term career development.

The validity and opportunities offered by the training schemes were measured against the framework of training best practice identified in 3.5.2 Chapter Three.

The modifications and improvements identified were detailed and summarised in 6.4 in Chapter Four. In the findings, it emerged that the modifications and improvements needed was for the existing training provisions to be expanded to consider:

- meeting the site managers' holistic training needs; and
- adopting best practice training approaches to its training processes.

The best practice approaches to expand the above provisions were as detailed out in 6.3.6.3 in Chapter Six.

ii. Identification of the best practice framework for training site managers to augment future training practices

The best practice training framework for training site managers was developed on the proposition for expanding the existing training provisions offered by the CIOB C/DSM and NVQ/SVQ SS/SM. Their features were outlined in 4.4.1 in Chapter Four and the expansion was as conceptualised in Figure 5.3.3. The validity of the best practice framework was confirmed with the confirmation of the validity of Hypothesis 1, 2 and 3.

In achieving this, both the CIOB C/DSM and NVQ/SVQ SS/SM training framework needs to be expanded. Key to the expansion is the re-consideration of the training provisions to:

i. better meeting the holistic training needs of site managers; and
ii. by adopting best practice approaches to the training processes.

The best practice elements identified for the expansion was verified and as outlined in 7.4.3 in Chapter Seven

8.3 DISCUSSIONS ON THE RESEARCH FINDINGS

The research findings were drawn principally on the literature and data drawn for the research, and there can be alternative views about the decisions made by the research relating to the scope of these elements drawn. Notwithstanding, the positive views from the research verification confirms that the research has achieved to make a significant contribution to research relating to the training of construction site managers. Within the scenario when research on the training of site managers is vastly lacking, this research has achieved to provide important in-sights and critique to the current practice of training the industry's site managers. The research findings have contributed to expand the knowledge-base of the elements that can encourage the improvement of the existing site management training provisions. It propounds the belief that the conception of the provisions for training site managers need to be expanded by taking into account the outcomes of training that will benefit the site managers' career and their job, and their employers. It also underlines the approaches that can be introduced to improve and expand the training processes to be more effective together with the strategies mooted by the industry to meet the need for more and better trained site managers.

It must be noted that the research has provided the findings of the investigations on the site management training provisions offered by the CIOB C/DSM and the NVQ/SVQ training, but this forms one part of the training that is provided to the industry site managers. The other major part of training offered to site managers is those that are provided in-house especially by construction organisations to their site managers, and as these training can be quite significant to the industry as a whole, it is convinced that this is the other critical area of research on the training of site managers.

Clearly, that there is a need for further work to augment the best practice framework and approaches identified for improving the site managers' training. The important areas identified and suggested together with the recommendations from 7.4.5 (Chapter Seven) are:

i. The site managers' development needs which can significantly vary within the industry. It is important for the site managers' training needs to be recognised in parallel with these variations when considering implementing the approaches to augment the training provisions.

ii. Considerations need to be given to the motivation underpinning the reason why construction organisations would encourage their site managers to comply with CSCS requirement and why site managers would want to follow the particular training course. Implementation of the CSCS without incorporating the CIOB C/DSM and NVQ/SVQ SS/SM together with the improvements would encourage neglect to the training schemes in preference to the 'easier route' to comply with the industry's requirements. Should this happen, it would be contrary to industry's objective to improve and train site managers.

iii. There is a clear need for construction organisations to appreciate the training and development of site managers as necessary. Engaging site managers to the training offered is not the only option for improving site managers and the training alone cannot be considered adequate for the site managers' development.

iv. The site management training provisions offered need to be homogenised, and to

better fit them with others professional development programmes as well as the different site managers and construction organisations within the industry. To benefit the industry, there should also be flexibility to allow larger companies to run their own in-hose programmes to the same standard and requirements. Whilst the framework has provided the outline for this, the industry should take the lead on initiatives towards this, with strong support from the Government and the major clients within the sector.

v. Improving the framework for training the site managers would necessitate a shift of focus of the NVQ/SVQ SS/SM training from being a predominantly performance and knowledge assessment mode to a more 'structured and modular' training approach programme. Obvious from the research finding is the need for the NVQ/SVQ training to consider learning by 'intervention' to complement the existing provision. This would necessitate isolating the training from the mainstream On-site Assessment and Training (OSAT) practice promoted by NVQ/SVQs. The test would centre on the extent to which NVQ is willing to expand this provision.

8.4. RECOMMENDATION FOR FURTHER RESEARCH

Following the research findings, further studies on the CIOB C/DSM and the NVQ/SVQ SS/SM training are necessary to further support improvements to the training provisions. The key areas of research recommended as follows:

i. Much data emerged to challenge the CIOB C/DSM and the NVQ/SVQ training to improve. Whilst the research have identified what needs to be improved, more

research would be necessary to identify how best the approaches can be implemented.

ii. To support (i), research on the development needs of site managers from different backgrounds would be very significant to augment the refinement of the provisions for improving support for the site managers' career development needs. It is also suggested that this be mapped against the site managers' development provisions that are/can be provided by the different construction organisations especially those from large, medium and small construction organisations.

iii. Further research on how trainees from the different backgrounds and construction organisations have improved following the training would provide a good understanding as to whom the training have been effective. This is particularly important to assist identify the general pattern and types of site managers enrolling into the training schemes, how they have improved in their job from the training and how far they have progressed in their career following the training. This would also be useful to provide more depth to the assessment on the quality of training and facilitation offered by the training organisations and colleges.

8.5. RESEARCH CONCLUSION

In closing, the research conceives that training the industry's site managers is about encouraging them to learn. Therefore any provisions designed for their training should fundamentally focus on creating the 'environment' that promote their effective learning. Significant efforts expanded to improve the training of site managers against the

challenge to overcome the difficulty in getting the industry to respond to consider the training of their site managers more seriously was acknowledged. Whilst much has been learnt from this research, there is clearly more scope for continuous learning and re-learning of the training if continuing improvement of the site managers' performance and development are to be achieved.

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Hypothesis 1:
"The current site management training provisions will improve with better understanding of the holistic training needs of site managers."

Context of holistic training:
- Training that meets the needs of the site managers, their employers and their projects.
- Training that better prepares them for all roles required of them in construction projects.
- Better support for their career development needs

Sub-hypothesis 1a:
"Consideration for meeting the collective needs of the site managers, their employers and their project's will improve the training provisions"

Objective:
1. To identify the needs of the site managers training
2. To determine the differences between these needs
3. To determine the importance for training to consider these collective needs

	RESPONDENTS	ELEMENTS OF TRAINING NEEDS	ASSESSMENT	TEST
1.	A) Site managers : Variables within site managers: a. Progression path into site management • Craft • Academic • Both b. Project experience: • New building works • Existing-build works • Non-building works	a. Job needs b. Training and career development needs c. Fulfilling employer's needs d. Meeting the requirements of the industry	• Identify the roles and tasks of site managers • Measure the impact of variables to the roles and tasks • Measure the effectiveness of the training provisions in meeting the needs • Identify the 'gap' for improving the provisions	Test to be carried out: a. Validity test b. Correlation coefficient test c. Significance test d. Central tendency
2.	Employers : Variables within construction organisations: a. Size: • Large • Medium • Small b. Construction activity: • New building works • Existing-build works • Others			
3.	Training Organisations/Colleges: a. CIOB b. NVQ/SVQ			

Hypothesis 1:
"The current site management training provisions will improve with better understanding of the holistic training needs of site managers."

Context of holistic training:
- Training that meets the needs of the site managers, their employers and their projects.
- Training that better prepares them for all roles required of them in construction projects.
- Better support for their career development needs

Sub-hypothesis 1b:
"Provisions for training site mangers will improve with training that better support the site manager's training and career development".

Objective:
1. To identify the type of support for the site managers' training and career development needs.
2. To the importance for training to consider these needs.

	RESPONDENT GROUPS	ELEMENTS OF SUPPORT FOR TRAINING & CAREER DEVELOPMENT NEEDS	ASSESSMENT	TEST
1.	A) Site managers : a. Career progression path into site management • Craft • Academic • Both b. Project experience: • New building works • Existing-build works • Non-building works	a. Training: • Paid leave • Sponsorship for training • Allowance to attend training • Logistic support for training • Compulsory training days/year • Training as a minimum requirement for staff development programme • Payment for professional fees b. Career/Job: • Promotion • Job enrichment • Pay increase • Continuing education/training c. Professional development: • Support for professional membership • Support for CPD	• Identify the validity of the proposition that the current training provisions needs to better support the site managers' training and career development needs • Measure the impact of variables to the roles and tasks • Establish the significance of considering the best practice approaches propositioned for the improvements	Test to be carried out: a. Validity test b. Correlation coefficient test c. Significance test d. Central tendency
2.	Employers : a. Size of const. organisation: • Large • Medium • Small b. Construction activity: • New building works • Existing-build works • Others			
3.	Training Organisations/Colleges: a. CIOB b. NVQ/SVQ			

Hypothesis 2:
"The CIOB C/DSM and NVQ/SVQ SS/SM training provisions will improve with adoption of best practice approaches within their training processes".

Context of adopting training best practice:
- Improving the Training Needs Analysis (TNA) approach.
- Expanding the design of the training.
- Improving the approach of implementing training
- Improving the approach to evaluate training.

Sub-hypothesis 2a:
"Improving the Training Needs Analysis (TNA) approach will improve the provisions for training site managers"

Objective:
1. To identify the accuracy of the current CIOB C/DSM and NVQ SS/SM training in identifying the TNA
2. To identify the significance of improving the CIOB C/DSM and NVQ/SVQ SS/SM with elements of best practice TNA

RESPONDENT GROUPS		ELEMENTS OF BEST PRACTICE APPROACH TO IMPROVE TRAINING NEEDS ANALYSIS (TNA)	ASSESSMENT	TEST
1.	A) Site managers that have had site management training from: a. CIOB C/DSM b. NVQ/SVQ SS/SM	• Consider the site manager's needs, the employer's needs and the project's needs • Involve the line manager/training manager • Mapping the 'gap' between current and required performance knowledge and skills • Consider feedback from previous training evaluation	• Identify the validity of the proposition that the accuracy of the current training TNA can be improved • Establish the significance of considering the best practice approaches propositioned for improving the accuracy of the training TNAs	Test to be carried out; a. Validity test b. Significance test c. Central tendency test
2.	Employers : a. Size of const. organisation: • Large • Medium • Small b. Construction activity: • New building works • Existing-build works • Others			
3.	Training Organisations/Colleges: a. CIOB b. NVQ/SVQ			

Hypothesis 2:
" The CIOB C/DSM and NVQ/SVQ SS/SM training provisions will improve with adoption of best practice approaches within their training processes"

Context of adopting training best practice:
- Improving the Training Needs Analysis (TNA) approach.
- Expanding the design of the training.
- Improving the approach of implementing training
- Improving the approach to evaluate training.

Sub-hypothesis 2b:
"The training provisions will improve by expanding the training design with best practice approaches"

Objective:
1. To identify the significance of improving the CIOB C/DSM and NVQ/SVQ SS/SM training design
2. To identify the best practice approaches this would be significant to improve the training designs.

RESPONDENTS		ELEMENTS OF BEST PRACTICE TO IMPROVE THE DESIGN AND DEVELOPMENT OF THE TRAINING	ASSESSMENT	TEST
1.	A) Site managers from: a. Large const. organisations b. Medium sized const. organisations c. Small const. organisations B) Site managers from: a. Craft based b. Academic based c. Craft & academic based	• Structure of the on-the-job and off-the-job training provision • Matching the training to the project operations • Adapting the training to the project management styles • The on-site training provision • The off-site training provision	• Assess the effectiveness of the current training structure and design • Identify the validity of the proposition that the current training design can be improved • Establish the significance of considering the best practice approaches propositioned for improving the training design	Test to be carried out; a. Validity test b. Significance test c. Central tendency
2.	Employers : a. Size of const. organisation: • Large • Medium • Small b. Construction activity: • New building works • Existing-build works • Others			
3.	Training Organisations/Colleges: a. CIOB b. NVQ/SVQ			

Hypothesis 2:
" The current site management training provisions will improve with adoption of best practice approaches to its training processes"

Context of adopting training best practice:
- Improving the Training Needs Analysis (TNA) approach.
- Expanding the design of the training.
- Improving the approach of implementing training
- Improving the approach to evaluate training.

Sub-hypothesis 2c:
"Expanding the approach to train based on best practice will improve the training provisions"

Objective:
1. To identify the significance of improving the CIOB C/DSM and NVQ/SVQ SS/SM with best practice training methods

	RESPONDENTS	ELEMENTS OF BEST PRACTICE TO IMPROVE THE TRAINGNG METHOD	ASSESSMENT	TEST
1.	A) Site managers from: a. Large const. organisations b. Medium sized const. organisations c. Small const. organisations B) Site managers from: a. Craft based b. Academic based c. Craft & academic based	• Case-studies • Role-play • Lectures • Group discussions • Combined use of the above range of techniques.	• Identify the validity of the proposition that the current training will improve by adopting the best practice training methods • Establish the significance of considering the best practice training methods for improving the training	Test to be carried out: a. Validity test b. Significance test
2.	Employers : a. Size of const. organisation: • Large • Medium • Small b. Construction activity: • New building works • Existing-build works • Others			
3.	Training Organisations/Colleges: a. CIOB b. NVQ/SVQ			

Hypothesis 2:
" The current site management training provisions will improve with adoption of best practice approaches to its training processes"

Context of adopting training best practice:

- Improving the Training Needs Analysis (TNA) approach.
- Expanding the design of the training.
- Improving the approach of implementing training
- Improving the approach to evaluate training.

Sub-hypothesis 2d:
"Improving the approach to evaluate training based on best practice will improve the training provisions"

Objective:

1. To identify the significance of improving the CITB and CIOB approach to evaluate training with elements of Best Practice
2. To establish the approaches to improve the training evaluations

	RESPONDENTS	ELEMENTS OF BEST PRACTICE TO IMPROVE THE DESIGN AND DEVELOPMENT OF THE TRAINING	ASSESSMENT	TEST
1.	A) Site managers from: a. Large const. organisations b. Medium sized const. organisations c. Small const. organisations B) Site managers from: a. Craft based b. Academic based c. Craft & academic based	• Evaluation of training after certain period following the training • Re-establish the approach to assess the application of knowledge and skills • Include the line-manager/training manager and trainer to evaluate the training • Reconsider the stages when competence should be assessed.	• Identify the validity of the proposition that the current training evaluation will improve by adopting the best practice training methods • Establish the significance of considering the best practice approaches propositioned for improving the training evaluation	Test to be carried out: a. Validity test b. Significance test
2.	Employers : a. Size of const. organisation: • Large • Medium • Small b. Construction activity: • New building works • Existing-build works • Others			
3.	Training Organisations/Colleges: a. CIOB b. NVQ/SVQ			

CENTRE FOR THE BUILT ENVIRONMENT (CBE)
SCHOOL OF ENVIRONMENT AND DEVELOPMENT
SHEFFIELD HALLAM UNIVERSITY

QUESTIONNAIRE SENIOR MANAGERS (TRAINING MANAGERS, CONSTRUCTION MANAGERS, PROJECT MANAGERS OR CONTRACT MANAGERS)

Preamble: Please note that the term 'site manager' used within this questionnaire shall also include the personnel in-charge of managing the construction production process.

SECTION ONE - Your organisation
(Please tick the appropriate section)

1. The position held in your organisation:
   ( ) Training Manager
   ( ) Quality Manager
   ( ) Project Manager
   ( ) Construction Manager
   ( ) Section Manager
   ( ) Other

2. Your firm employs:
   ( ) Less than 13 full-time staff
   ( ) Between 14-49 full-time staff
   ( ) 50-249 full-time staff
   ( ) More than 250 full-time staff

3. The type/s of construction projects undertaken by your firm:
   ( ) New building works
   ( ) Existing building works (refurbishment, upgrading, alteration, preservation works, etc.)
   ( ) Non-building works

4. The type of site management training provided to your site managers:
   ( ) Exclusive company in-house training
   ( ) Company in-house training provided in association with resognised industry level training (NVQ/SVQ or CIOB)
   ( ) Industry level training (NVQ/SVQ or CIOB)

5. The type of site management training provided to your site managers:
   ( ) CIOB Certificate in Site Management
   ( ) CIOB Diploma in Site Management
   ( ) NVQ/SVQ Site Supervision
   ( ) NVQ/SVQ Site Management
   ( ) Other

6. The equivalent NVQ/SVQ site management qualification/s attained from the training provided:
   ( ) None
   ( ) NVQ/SVQ Level 2
   ( ) NVQ/SVQ Level 3
   ( ) NVQ/SVQ Level 4
   ( ) NVS/SVQ Level 5

SECTION TWO - The training
(Please indicate your opinion by circling the number that match closest to your opinion)

2.1 The important objectives of training:	*Not important*				*Very Important*
a. *Meeting the needs of the site managers' job (managing all construction resources, administer sundry and administrative duties, and responsibilities to third parties, etc.)*	1	2	3	4	5

b.	*Supporting the site managers' career development needs (continuing education, professional development, salary, promotion, job enrichment, etc.)*	1	2	3	4	5
c.	*Fulfilling the needs of their employer/organisation (current and future projects or contracts, organisational expansion, diversification and/or technological specialisation, etc.)*	1	2	3	4	5
d.	*Adhering to the requirements of the industry and authorities (health and safety, environment, the Construction Skills Certification Scheme (CSCS), etc.)*	1	2	3	4	5
2.2	The adequacy of the training provided in meeting the following needs:	*Not Adequate*				*Very Adequate*
a.	*The site managers' job needs*	1	2	3	4	5
b.	*Supporting their career development needs*	1	2	3	4	5
c.	*Fulfilling the employer's/organisational needs*	1	2	3	4	5
d.	*Adhering to the requirements of the industry and authorities*	1	2	3	4	5
2.3	The importance of the following roles and responsibilities in their job:					
a.	*Managing Resources:*	*Not important*				*Very Important*
	i. *Plant*	1	2	3	4	5
	ii. *Labour*	1	2	3	4	5
	iii. *Materials*	1	2	3	4	5
	iv. *Staff*	1	2	3	4	5
	v. *Sub-contractors*	1	2	3	4	5
b.	*To achieve project objectives:*	*Not important*				*Very Important*
	i. *Time*	1	2	3	4	5
	ii. *Cost*	1	2	3	4	5
	iii. *Quality*	1	2	3	4	5
	iv. *Health & safety*	1	2	3	4	5
	v. *Environment*	1	2	3	4	5
c.	*Sundry & administrative duties:*	*Not important*				*Very Important*
	i. *Surveying works (setting-out, lines and levels, benchmarks, signage, etc).*	1	2	3	4	5
	ii. *Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondences, etc.)*	1	2	3	4	5
	iii. *Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)*	1	2	3	4	5
d.	*Communicating and responsibilities to Third Parties:*	*Not important*				*Very Important*
	i. *Authorities (local authorities, police, public, etc.)*	1	2	3	4	5
	ii. *Main Contractor*	1	2	3	4	5

iii.	*Clients, consultants and/or the design team*	1	2	3	4	5

2.4 Effectiveness of the training provided in training them for the following roles and responsibilities?

a.	*Managing Resources:*	*Not Effective*				*Very Effective*
i.	*Plant*	1	2	3	4	5
ii.	*Labour*	1	2	3	4	5
iii.	*Materials*	1	2	3	4	5
iv.	*Staff*	1	2	3	4	5
v.	*Sub-contractors*	1	2	3	4	5
b.	*To achieve project objectives:*	*Not Effective*				*Very Effective*
i.	*Time*	1	2	3	4	5
ii.	*Cost*	1	2	3	4	5
iii.	*Quality*	1	2	3	4	5
iv.	*Health & safety*	1	2	3	4	5
v.	*Environment*	1	2	3	4	5
c.	*Sundry & administrative duties:*	*Not Effective*				*Very Effective*
i.	*Surveying works (setting-out, lines and levels, benchmarks, signage, etc).*	1	2	3	4	5
ii.	*Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondences, etc.)*	1	2	3	4	5
iii.	*Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)*	1	2	3	4	5
d.	*Communicating and responsibilities to Third Parties:*	*Not important*				*Very Important*
i.	*Authorities (local authorities, police, public, etc.)*	1	2	3	4	5
ii.	*Main Contractor*	1	2	3	4	5
iii.	*Clients, consultants and/or the design team*	1	2	3	4	5

2.5. To what extent do you consider the following support for the site managers' training and career development would be significant for improving the training provisions?

a.	*Support for the site managers' professional development in the form of :*	*Not Significant*				*Very Significant*
i.	*Support/recommendation for professional membership*	1	2	3	4	5
ii.	*Continuing Professional Development (CPD)*	1	2	3	4	5
b.	*Support for training form industry:*	*Not Significant*				*Very Significant*
i.	*Make the training a minimum requirement of staff development programme*	1	2	3	4	5
ii.	*Support for continuing education/training*	1	2	3	4	5

		Not Significant				Very Significant
c.	*Support from within the employment*					
i.	*Allowance to attend the training*	1	2	3	4	5
ii.	*Paid leave to attend training*	1	2	3	4	5
iii.	*Logistic support for training*	1	2	3	4	5
iv.	*Sponsorship for training*	1	2	3	4	5
v.	*Job enrichment*	1	2	3	4	5
v.	*Pay increase upon completion of the training*	1	2	3	4	5
vi.	*Bonus for passing the training*	1	2	3	4	5
vii.	*Support for continuing education or training*	1	2	3	4	5
viii.	*Sponsorship/support for continuing education or training*	1	2	3	4	5

SECTION THREE – The training process
(Please indicate your opinion by circling the number which match closest to your opinion or by ticking the space provided)

		Not Accurate				Very Accurate
3.1.	How do you rate the accuracy of the training in identifying the site managers' training needs:	1	2	3	4	5

		Not Significant				Very Significant
3.2.	The significance of considering the following approaches to improve identify the site managers' training needs:					
a.	*Take into account the collective needs of the site manager's employment/career, their project and their employer's/organisational needs*	1	2	3	4	5
b.	*Involve their line manager and/or training manager when identifying their training needs*	1	2	3	4	5
c.	*Identify their performance gap by mapping their present level of skill against the performance required at the job*	1	2	3	4	5
d.	*Review feedbacks from the previous training evaluation*	1	2	3	4	5

		Not Suitable				Very Suitable
3.3.	The suitability of the training design against the followings:					
a.	*Matching the training to the project operations*	1	2	3	4	5
b.	*Adaptability of the training to the project management style*	1	2	3	4	5
c.	*The off-site training provision*	1	2	3	4	5
d.	*The on-site training provision*	1	2	3	4	5
e.	*The assessment of competency*	1	2	3	4	5

		Not Significant				Very Significant
3.4.	Training methods that can significantly improve the training:					
a.	*Case-studies*	1	2	3	4	5
b.	*Role-play*	1	2	3	4	5
c.	*Lectures*	1	2	3	4	5
d.	*Group discussions*	1	2	3	4	5

e.	*Presentations*	1	2	3	4	5

		Not Effective				*Very Effective*
3.5.	The effectiveness of the training evaluation:	1	2	3	4	5

3.6. When do you think the training should be evaluated?
(Please tick)
( ) At the end of each training module
( ) At the end of the training programme
( ) After a specific period after the completion of the training

3.7. The current practice of evaluating the training:
(Please tick)
( ) At the end of each training module
( ) At the end of the training programme
( ) After a specific period after the completion of the training

		Not Significant				*Very Significant*
3.8.	The extent you think the training evaluation would improve if the following processes were considered?					
a.	*Establish a clearer method to assess the application of knowledge and skills trained*	1	2	3	4	5
b.	*Include the line manager, training manager and trainer to evaluate the training*	1	2	3	4	5
c.	*Reconsider the stages when competence should be assessed*	1	2	3	4	5

Thank you for your significant contribution to this research. Please return the completed questionnaire in the self-addressed envelope provided

CENTRE FOR THE BUILT ENVIRONMENT (CBE)
SCHOOL OF ENVIRONMENT AND DEVELOPMENT
SHEFFIELD HALLAM UNIVERSITY

QUESTIONNAIRE FOR CONSTRUCTION SITE MANAGERS

Preamble: Please note that the term 'site manager' used within this questionnaire shall also include the personnel in-charge of managing the construction production process.

SECTION ONE A

1. Your current site management position:
   ( ) Site Manager
   ( ) Section Manager
   ( ) Site Production Manager
   ( ) Site Agent
   ( ) Other

2. You report to the:
   ( ) Project Manager
   ( ) Operations Manager
   ( ) Contract Manager
   ( ) Construction Manager
   ( ) Section Manager
   ( ) Other

3. Your career progression into site management:
   ( ) Craft
   ( ) Academic
   ( ) Both

4. Your experience in site management:
   ( ) Less than 5 years
   ( ) 5 – 10 years
   ( ) More than 10 years

5. Your employer employs:
   ( ) Less than 13 full-time staff
   ( ) 14 - 49 full-time staff
   ( ) 50 – 249 full-time staff
   ( ) More than 250 full-time staff

6. The type/s of construction projects you have been involved in:
   ( ) New building works
   ( ) Existing building works (refurbishment, upgrading, alteration, preservation works, etc.)
   ( ) Non-building works

7. The type of site management training you received:
   ( ) Exclusive company in-house training
   ( ) Company in-house training provided in association with resognised industry level training (NVQ/SVQ or CIOB)
   ( ) Industry level training (NVQ/SVQ or CIOB)

8. The type of site management training you received:
   ( ) CIOB Certificate in Site Management
   ( ) CIOB Diploma in Site Management
   ( ) NVQ/SVQ Site Supervision
   ( ) NVQ/SVQ Site Management
   ( ) Other

9. The equivalent NVQ/SVQ site management qualification/s attained from the training provided:
   ( ) None
   ( ) NVQ/SVQ Level 2
   ( ) NVQ/SVQ Level 3
   ( ) NVQ/SVQ Level 4
   ( ) NVS/SVQ Level 5

10. The type of Construction Skill Certification Scheme (CSCS) card that you hold:
( ) Gold Supervisor Card
( ) Platinum Card
( ) Black Card
( ) None of the above

SECTION TWO - The training
(Please indicate your opinion by circling the number that match closest to your opinion)

2.1 The important objectives of training:

		Not important				*Very Important*
a.	*Meeting the needs of the site managers' job (managing all construction resources, administer sundry and administrative duties, and responsibilities to third parties, etc.)*	1	2	3	4	5
b.	*Supporting the site managers' career development needs (continuing education, professional development, salary, promotion, job enrichment, etc.)*	1	2	3	4	5
c.	*Fulfilling the needs of their employer/organisation (current and future projects or contracts, organisational expansion, diversification and/or technological specialisation, etc.)*	1	2	3	4	5
d.	*Adhering to the requirements of the industry and authorities (health and safety, environment, the Construction Skills Certification Scheme (CSCS), etc.)*	1	2	3	4	5

2.2 The adequacy of the training provided in meeting the following needs:

		Not Adequate				*Very Adequate*
a.	*The site managers' job needs*	1	2	3	4	5
b.	*Supporting their career development needs*	1	2	3	4	5
c.	*Fulfilling the employer's/organisational needs*	1	2	3	4	5
d.	*Adhering to the requirements of the industry and authorities*	1	2	3	4	5

2.3 The importance of the following roles and responsibilities in their job:

			Not important				*Very Important*
a.	*Managing Resources:*						
	i.	*Plant*	1	2	3	4	5
	ii.	*Labour*	1	2	3	4	5
	iii.	*Materials*	1	2	3	4	5
	iv.	*Staff*	1	2	3	4	5
	v.	*Sub-contractors*	1	2	3	4	5
b.	*To achieve project objectives:*		*Not important*				*Very Important*
	i.	*Time*	1	2	3	4	5
	ii.	*Cost*	1	2	3	4	5
	iii.	*Quality*	1	2	3	4	5
	iv.	*Health & safety*	1	2	3	4	5
	v.	*Environment*	1	2	3	4	5
c.	*Sundry & administrative duties:*		*Not important*				*Very Important*
	i.	*Surveying works (setting-out, lines and levels, benchmarks, signage, etc).*	1	2	3	4	5

ii.	*Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondences, etc.)*	1	2	3	4	5
iii.	*Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)*	1	2	3	4	5

d.	*Communicating and responsibilities to Third Parties:*	*Not important*				*Very Important*
i.	*Authorities (local authorities, police, public, etc.)*	1	2	3	4	5
ii.	*Main Contractor*	1	2	3	4	5
iii.	*Clients, consultants and/or the design team*	1	2	3	4	5

2.4 Effectiveness of the training provided in training for the following roles and responsibilities?

a.	*Managing Resources:*	*Not Effective*				*Very Effective*
i.	*Plant*	1	2	3	4	5
ii.	*Labour*	1	2	3	4	5
iii.	*Materials*	1	2	3	4	5
iv.	*Staff*	1	2	3	4	5
v.	*Sub-contractors*	1	2	3	4	5

b.	*To achieve project objectives:*	*Not Effective*				*Very Effective*
i.	*Time*	1	2	3	4	5
ii.	*Cost*	1	2	3	4	5
iii.	*Quality*	1	2	3	4	5
iv.	*Health & safety*	1	2	3	4	5
v.	*Environment*	1	2	3	4	5

c.	*Sundry & administrative duties:*	*Not Effective*				*Very Effective*
i.	*Surveying works (setting-out, lines and levels, benchmarks, signage, etc).*	1	2	3	4	5
ii.	*Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondences, etc.)*	1	2	3	4	5
iii.	*Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)*	1	2	3	4	5

d.	*Communicating and responsibilities to Third Parties:*	*Not important*				*Very Important*
i.	*Authorities (local authorities, police, public, etc.)*	1	2	3	4	5
ii.	*Main Contractor*	1	2	3	4	5
iii.	*Clients, consultants and/or the design team*	1	2	3	4	5

2.5. To what extent do you consider the following support for the site managers' training and career development would be significant for improving the training provisions?

		Not significant				Very Significant
a.	*Support for the site managers' professional development in the form of :*					
	i. Support/recommendation for professional membership	1	2	3	4	5
	ii. Continuing Professional Development (CPD)	1	2	3	4	5

		Not significant				Very Significant
b.	*Support for training form industry:*					
	i. Make the training a minimum requirement of staff development programme	1	2	3	4	5
	ii. Support for continuing education/training	1	2	3	4	5

		Not significant				Very Significant
c.	*Support from within the employment*					
	i. Allowance to attend the training	1	2	3	4	5
	ii. Paid leave to attend training	1	2	3	4	5
	iii. Logistic support for training	1	2	3	4	5
	iv. Sponsorship for training	1	2	3	4	5
	v. Job enrichment	1	2	3	4	5
	vi. Pay increase upon completion of the training	1	2	3	4	5
	vii. Bonus for passing the training	1	2	3	4	5
	viii. Support for continuing education/ training	1	2	3	4	5

SECTION THREE – The training process
(Please indicate your opinion by circling the number which match closest to your opinion or by ticking the space provided)

		Not Accurate				Very Accurate
3.1.	How do you rate the accuracy of the training in identifying the site managers' training needs:	1	2	3	4	5

		Not Significant				Very Significant
3.2.	The significance of considering the following approaches to improve identify the site managers' training needs:					
a.	*Take into account the collective needs of the site manager's employment/career, their project and their employer's/organisational needs*	1	2	3	4	5
b.	*Involve their line manager and/or training manager when identifying their training needs*	1	2	3	4	5
c.	*Identify their performance gap by mapping their present level of skill against the performance required at the job*	1	2	3	4	5
d.	*Review feedbacks from the previous training evaluation*	1	2	3	4	5

		Not Suitable				Very Suitable
3.3.	The suitability of the training design against the followings:					
a.	*Matching the training to the project operations*	1	2	3	4	5
b.	*Adaptability of the training to the project management style*	1	2	3	4	5
c.	*The off-site training provision*	1	2	3	4	5
d.	*The on-site training provision*	1	2	3	4	5
e.	*The assessment of competency*	1	2	3	4	5

		Not Significant				Very Significant
3.4.	Training methods that can significantly improve the training:					

a.	*Case-studies*	1	2	3	4	5
b.	*Role-play*	1	2	3	4	5
c.	*Lectures*	1	2	3	4	5
d.	*Group discussions*	1	2	3	4	5
e.	*Presentations*	1	2	3	4	5

		Not Effective				*Very Effective*
3.5.	The effectiveness of the training evaluation:	1	2	3	4	5

3.6. When do you think the training should be evaluated?
(Please tick)
( ) At the end of each training module
( ) At the end of the training programme
( ) After a specific period after the completion of the training

3.7. The current practice of evaluating the training:
(Please tick)
( ) At the end of each training module
( ) At the end of the training programme
( ) After a specific period after the completion of the training

		Not Significant				*Very Significant*
3.8.	The extent you think the training evaluation would improve if the following processes were considered?					
a.	*Establish a clearer method to assess the application of knowledge and skills trained*	1	2	3	4	5
b.	*Include the line manager, training manager and trainer to evaluate the training*	1	2	3	4	5
c.	*Reconsider the stages when competence should be assessed*	1	2	3	4	5

Thank you for your significant contribution to this research. Please return the completed questionnaire in the self-addressed envelope provided.

CENTRE FOR THE BUILT ENVIRONMENT (CBE)
SCHOOL OF ENVIRONMENT AND DEVELOPMENT
SHEFFIELD HALLAM UNIVERSITY

QUESTIONNAIRE FOR TRAINING MANAGERS/TRAINERS FROM TRAINING ORGANISATIONS/COLLEGES

Preamble: Please note that the term 'site manager' used within this questionnaire shall also include the personnel in-charge of managing the construction production process.

SECTION ONE - Your organisation
(Please tick the appropriate section)

1. The type of site management training that you provide:
   ( ) Exclusive company in-house training
   ( ) Company in-house training provided in association with resognised industry level training (NVQ/SVQ or CIOB)
   ( ) Industry level training (NVQ/SVQ or CIOB)

2. The qualifications attained from the training:
   ( ) CIOB Certificate in Site Management
   ( ) CIOB Diploma in Site Management
   ( ) NVQ/SVQ Site Supervision
   ( ) NVQ/SVQ Site Management
   ( ) Other

3. The equivalent NVQ/SVQ site management qualification/s attained from the training provided:
   ( ) None
   ( ) NVQ/SVQ Level 2
   ( ) NVQ/SVQ Level 3
   ( ) NVQ/SVQ Level 4
   ( ) NVS/SVQ Level 5

SECTION TWO - The training
(Please indicate your opinion by circling the number that match closest to your opinion)

		Not important				*Very Important*
2.1	The important objectives of training:					
a.	*Meeting the needs of the site managers' job (managing all construction resources, administer sundry and administrative duties, and responsibilities to third parties, etc.)*	1	2	3	4	5
b.	*Supporting the site managers' career development needs (continuing education, professional development, salary, promotion, job enrichment, etc.)*	1	2	3	4	5
c.	*Fulfilling the needs of their employer/organisation (current and future projects or contracts, organisational expansion, diversification and/or technological specialisation, etc.)*	1	2	3	4	5
d.	*Adhering to the requirements of the industry and authorities (health and safety, environment, the Construction Skills Certification Scheme (CSCS), etc.)*	1	2	3	4	5
2.2	The adequacy of the training provided in meeting the following needs:	*Not Adequate*				*Very Adequate*
a.	*The site managers' job needs*	1	2	3	4	5
b.	*Supporting their career development needs*	1	2	3	4	5
c.	*Fulfilling the employer's/organisational needs*	1	2	3	4	5
d.	*Adhering to the requirements of the industry and authorities*	1	2	3	4	5

2.3 The importance of the following roles and responsibilities in their job:

a.	*Managing Resources:*	*Not important*				*Very Important*
	i. *Plant*	1	2	3	4	5
	ii. *Labour*	1	2	3	4	5
	iii. *Materials*	1	2	3	4	5
	iv. *Staff*	1	2	3	4	5
	v. *Sub-contractors*	1	2	3	4	5
b.	*To achieve project objectives:*	*Not important*				*Very Important*
	i. *Time*	1	2	3	4	5
	ii. *Cost*	1	2	3	4	5
	iii. *Quality*	1	2	3	4	5
	iv. *Health & safety*	1	2	3	4	5
	v. *Environment*	1	2	3	4	5
c.	*Sundry & administrative duties:*	*Not important*				*Very Important*
	i. *Surveying works (setting-out, lines and levels, benchmarks, signage, etc).*	1	2	3	4	5
	ii. *Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondences, etc.)*	1	2	3	4	5
	iii. *Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)*	1	2	3	4	5
d.	*Communicating and responsibilities to Third Parties:*	*Not important*				*Very Important*
	i. *Authorities (local authorities, police, public, etc.)*	1	2	3	4	5
	ii. *Main Contractor*	1	2	3	4	5
	iii. *Clients, consultants and/or the design team*	1	2	3	4	5

2.4 Effectiveness of the training provided in training them for the following roles and responsibilities?

a.	*Managing Resources:*	*Not Effective*				*Very Effective*
	i. *Plant*	1	2	3	4	5
	ii. *Labour*	1	2	3	4	5
	iii. *Materials*	1	2	3	4	5
	iv. *Staff*	1	2	3	4	5
	v. *Sub-contractors*	1	2	3	4	5
b.	*To achieve project objectives:*	*Not Effective*				*Very Effective*
	i. *Time*	1	2	3	4	5
	ii. *Cost*	1	2	3	4	5
	iii. *Quality*	1	2	3	4	5

iv.	*Health & safety*	1	2	3	4	5
v.	*Environment*	1	2	3	4	5

c.	*Sundry & administrative duties:*	*Not Effective*				*Very Effective*
i.	*Surveying works (setting-out, lines and levels, benchmarks, signage, etc).*	1	2	3	4	5
ii.	*Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondences, etc.)*	1	2	3	4	5
iii.	*Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)*	1	2	3	4	5

d.	*Communicating and responsibilities to Third Parties:*	*Not important*				*Very Important*
i.	*Authorities (local authorities, police, public, etc.)*	1	2	3	4	5
ii.	*Main Contractor*	1	2	3	4	5
iii.	*Clients, consultants and/or the design team*	1	2	3	4	5

2.5. To what extent do you consider the following support for the site managers' training and career development would be significant for improve the training provisions?

a.	*Support for the site managers' professional development in the form of :*	*Not Significant*				*Very Significant*
i.	*Support/recommendation for professional membership*	1	2	3	4	5
ii.	*Continuing Professional Development (CPD)*	1	2	3	4	5

b.	*Support for training form industry:*	*Not significant*				*Very Significant*
i.	*Make the training a minimum requirement of staff development programme*	1	2	3	4	5
ii.	*Support for continuing education/training*	1	2	3	4	5

c.	*Support from within the employment*	*Not significant*				*Very Significant*
i.	*Allowance to attend the training*	1	2	3	4	5
ii.	*Paid leave to attend training*	1	2	3	4	5
iii.	*Logistic support for training*	1	2	3	4	5
iv.	*Sponsorship for training*	1	2	3	4	5
v.	*Job enrichment*	1	2	3	4	5
vi.	*Pay increase upon completion of the training*	1	2	3	4	5
vii.	*Bonus for passing the training*	1	2	3	4	5
viii.	*Support for continuing education/ training*	1	2	3	4	5

SECTION THREE – The training process
(Please indicate your opinion by circling the number which match closest to your opinion or by ticking the space provided)

		Not Accurate				*Very Accurate*
3.1.	How do you rate the accuracy of the training in identifying the site managers' training needs:	1	2	3	4	5

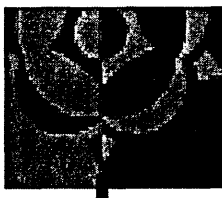
3.2.	The significance of considering the following approaches to improve identify the site managers' training needs:	*Not Significant*				*Very Significant*
a.	*Take into account the collective needs of the site manager's employment/career, their project and their employer's/organisational needs*	1	2	3	4	5
b.	*Involve their line manager and/or training manager when identifying their training needs*	1	2	3	4	5
c.	*Identify their performance gap by mapping their present level of skill against the performance required at the job*	1	2	3	4	5
d.	*Review feedbacks from the previous training evaluation*	1	2	3	4	5
3.3.	The suitability of the training design against the followings:	*Not Suitable*				*Very Suitable*
a.	*Matching the training to the project operations*	1	2	3	4	5
b.	*Adaptability of the training to the project management style*	1	2	3	4	5
c.	*The off-site training provision*	1	2	3	4	5
d.	*The on-site training provision*	1	2	3	4	5
e.	*The assessment of competency*	1	2	3	4	5
3.4.	Training methods that can significantly improve the training:	*Not Significant*				*Very Significant*
a.	*Case-studies*	1	2	3	4	5
b.	*Role-play*	1	2	3	4	5
c.	*Lectures*	1	2	3	4	5
d.	*Group discussions*	1	2	3	4	5
e.	*Presentations*	1	2	3	4	5
		Not Effective				*Very Effective*
3.5.	The effectiveness of the training evaluation:	1	2	3	4	5

3.6. When do you think the training should be evaluated?
(Please tick)
( ) At the end of each training module
( ) At the end of the training programme
( ) After a specific period after the completion of the training

3.7. The current practice of evaluating the training:
(Please tick)
( ) At the end of each training module
( ) At the end of the training programme
( ) After a specific period after the completion of the training

3.8.	The extent you think the training evaluation would improve if the following processes were considered?	*Not Significant*				*Very Significant*
a.	*Establish a clearer method to assess the application of knowledge and skills trained*	1	2	3	4	5
b.	*Include the line manager, training manager and trainer to evaluate the training*	1	2	3	4	5
c.	*Reconsider the stages when competence should be assessed*	1	2	3	4	5

Thank you for your significant contribution to this research. Please return the completed questionnaire in the self-addressed envelope provided.



Sheffield Hallam University

Centre for the Built Environment (CBE)
School of Environment and Development

Please click here to link to the questionnaires if you are the:

Site Manager

Senior Manager in Construction

Site Management Training Organisation/ Colleague

Welcome to the Centre for the Built Environment (CBE), Sheffield Hallam University.

CBE RESEARCH PROJECT IN ASSOCIATION WITH THE CHARTERED INSTITUTE OF BUILDING (CIOB)

The CBE, in cooperation with the CIOB are engaged in a research project entitled **"An Improved Site Management Training Framework for Construction Site Managers within the UK Construction Industry based on Best Practice".**

The project which started in November 2001, aims to develop the improved framework by expanding the current knowledge base of the factors which influence the design and delivery of training schemes for construction site managers. The findings from this research project are anticipated to be very useful in assisting the UK construction industry to improve the current training of the construction industry's site managers.

We are currently seeking key data from: (i) Site Managers, (ii) Senior Managers in Construction; and (iii) providers of site management training programmes within the construction industry. We are very pleased to invite you to support this research project by taking a few minutes to answer some simple questions by clicking the links to the questionnaires prepared on the left of this web page.

We would appreciate if you could answer and submit the questionnaire by **10 April 2004**.

We assure you that this study is completely confidential and no organisation or person responding to this questionnaire will be referred to by name. If you are interested to know more about the project or its findings, please do not hesitate to contact us.

We thank you in advance for your valuable support.

Project team:
***Padzil F. Hassan** BSc, MSc*
***Prof. Alan Griffith** MSc., PhD, FCIOB*
***Dr. Paul Stephenson** BSc, MSc, MCIOB*

For further enquiries, please contact:
***Padzil.F.Hassan@shu.students.ac.uk** or call: 0114 – 2253244 (Direct Line) or 07763222915*

Sheffield Hallam University
Centre for Built Environment

QUESTIONNAIRE FOR SITE MANAGERS

The questionnaire aims assess the site management training provided to site managers within the construction industry.

***Preamble**: Kindly note that the term 'site manager' used within this questionnaire also include the personnel in-charge of managing the construction production process at the project site.*

1) Your current site management position:

- ○ Site Manager
- ○ Section Manager
- ○ Project Manager
- ○ Site Production Manager
- ○ Site Agent
- ○ Other

2) You report to the:

- ○ Project Manager
- ○ Operations Manager
- ○ Contract Manager
- ○ Construction Manager
- ○ Section Manager
- ○ Other

3) Your career progression into site management:

- ○ Craft
- ○ Academic
- ○ Both

4) Your experience in site management:

- ○ Less than 5 years
- ○ 5 - 10 years
- ○ More than 10 years

5) Your employer employs:

- ○ Less than 13 full-time staff
- ○ Between 14- 49 full-time staff
- ○ Between 50-249 full-time staff
- ○ More than 250 full-time staff

6) The type/s of construction projects you have been involved in:

- ☐ New building work
- ☐ Existing building work (refurbishment, upgrading, alteration, preservation work, etc.
- ☐ Non-building work (civil engineering, fabricating work, etc.)

7) The type of site management training that you received:

- ○ Exclusive company in-house training
- ○ Company in-house training provided in association with recognised industry level training (CIOB or NVQ/SVQ)
- ○ Industry level training provided by CIOB or NVQ/SVQ
- ○ Other

8) The name of the site management training:

- ☐ CIOB Certificate in Site Management
- ☐ CIOB Diploma in Site Management
- ☐ NVQ/SVQ Construction Site Supervision
- ☐ NVQ/SVQ Construction Site Management
- ☐ Other

9) The equivalent NVQ/SVQ site management qualification attained from the training:

- ○ NVQ/SVQ Level 2
- ○ NVQ/SVQ Level 3
- ○ NVQ/SVQ Level 4
- ○ NVQ/SVQ Level 5
- ○ None of the above

10) The type of Construction Skill Certification Scheme (CSCS) card that you hold:

- ○ Gold Supervisor Card
- ○ Platinum Card

- Black Card
- None of the above

11) What do you consider to be the important objectives of your training?

	Not important 1	Fairly important 2	Important 3	Very important 4
Meeting the needs of the job (managing all construction resources, help achieve project objectives, sundry and administrative duties, and responsibilities to third parties, etc.)				
Supporting your career development needs (continuing education, professional development, salary, promotion, job enrichment, etc.)				
Fulfilling the needs of the organisation (current and future projects or contracts, organisational expansion, diversification, developing technology, etc.)				
Adhering to the requirements of the industry and authorities (health and safety, environment, the Construction Skills Certification Scheme (CSCS), etc.)				

12) How do you rate the training you received in meeting the following needs?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Your job needs					
Supporting your career development needs					
Fulfilling your employer's/organisational needs					
Adhering to the requirements of the industry and authorities					

13) How do you rate the importance for you to be able to manage the following following construction resources in your job:

	Not important 1	Fairly important 2	Important 3	Very important 4
Plant	○	○	○	○
Labour	○	○	○	○
Materials	○	○	○	○
Staff	○	○	○	○
Sub-contractors	○	○	○	○

14) How do you rate the importance for you to be able to assist achieve the following project objectives:

	Not important 1	Fairly important 2	Important 3	Very important 4
Time	○	○	○	○
Cost	○	○	○	○
Quality	○	○	○	○
Health & Safety	○	○	○	○
Environment	○	○	○	○

15) How do you rate the importance for you to be able to undertake the following sundry and administrative duties:

	Not important 1	Fairly important 2	Important 3	Very important 4
Surveying works (setting-out, lines and levels, benchmarks, signages, etc.)	○	○	○	○
Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondence, etc.)	○	○	○	○
Pre-construction works (site inspection, designing site layout, forecasting and	○	○	○	○

scheduling resources, site mobilisation, etc.)

16) How do you rate the importance for you to be responsible to the following Third Parties in construction projects:

	Not important 1	Fairly important 2	Important 3	Very important 4
Authorities (local authorities, police, public, etc.)	○	○	○	○
Main Contractor	○	○	○	○
Clients, consultants and/or the design team	○	○	○	○

17) How do you rate the effectiveness of the training provided in developing you to manage the following resources?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Plant	○	○	○	○	○
Labour	○	○	○	○	○
Materials	○	○	○	○	○
Staff	○	○	○	○	○
Sub-contractors	○	○	○	○	○

18) How do you rate the effectiveness of the training provided in developing you to assist achieve the following project objectives?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Time	○	○	○	○	○
Cost	○	○	○	○	○
Quality	○	○	○	○	○
Health & Safety	○	○	○	○	○

Environment	○	○	○	○	○

19) How do you rate the effectiveness of the training provided in assisting you to undertake the following sundry and administrative duties?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Surveying works (setting-out, lines and levels, benchmarks, signages, etc.)	○	○	○	○	○
Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondence, etc.)	○	○	○	○	○
Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)	○	○	○	○	○

20) How do you rate the effectiveness of the training in training you the responsibilities to the following Third Parties in construction projects?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Authorities (local authorities, police, public)	○	○	○	○	○
Main Contractor	○	○	○	○	○
Clients, consultants and/or the design team	○	○	○	○	○

21) To what extent do you think the following support for the site managers training at the industry level would be significant for improving the training provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very significant 4
Make the training a minimum requirement of staff development programme	○	○	○	○
Provisions for compulsory training days/year	○	○	○	○

22) To what extent do you consider the following support by the employer would be significant for improving the training provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very significant 4
Allowance to attend training	○	○	○	○
Paid leave to attend training	○	○	○	○
Logistic support for training	○	○	○	○
Sponsorship/support for continuing education or training	○	○	○	○
Job enrichment	○	○	○	○
Promotion upon completion of the training	○	○	○	○
Pay increase upon completion of training	○	○	○	○
Bonus for passing the training	○	○	○	○

23) To what extent do you consider the following support for your professional development would be significant for improving the training provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very significant 4
Support for professional membership	○	○	○	○
Support for Continuing Professional developement (CPD)	○	○	○	○

24) How would rate the effectiveness of the following training approaches in developing site management competency?

(*Structured training in the answers below refers to formal training with a specific training curriculum conducted by trainers/peers during the training session, while modular training refers to the modules for training key site management knowledge/skills*)

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Structured and modular off-the-job and on-the-job training	○	○	○	○	○
Non-structured but modular off-the-job and on-the-job training	○	○	○	○	○

Structured and modular on-the-job only training	○	○	○	○	○
Non-structured but modular off-the-job only training	○	○	○	○	○

25) How do you rate the accuracy of the training in identifying your training needs?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
	○	○	○	○	○

26) To what extent do you consider the following approaches would be significant to improve identify your training needs?

	Insignificant 1	Fairly significant 2	Significant 3	Very significant 4
Take into account the collective needs of your career, your project and the organisation's needs	○	○	○	○
Involve your line manager and/or training manager when identifying your training needs	○	○	○	○
Identify your training gap by mapping your present knowledge and skill against the performance required for the job	○	○	○	○
Consider feedback from previous training evaluation	○	○	○	○

27) How do you rate the design of the training against the following?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Matching the training to the project operations	○	○	○	○	○
Adaptability of the training to the project management style	○	○	○	○	○
The off-site training provision	○	○	○	○	○
The on-site training provision	○	○	○	○	○

The assessment of competency	○	○	○	○	○
Promoting innovation to current practices	○	○	○	○	○

28) To what extent do you consider the training would improve if more of the following training methods were adopted during training?

	No improvement 1	Slight improvement 2	Significant improvement 3	Very significant improvement 4
Case-studies	○	○	○	○
Role-play	○	○	○	○
Lectures	○	○	○	○
Group discussions	○	○	○	○
Combine the use of the above range of training methods	○	○	○	○

29) How do you rate the effectiveness of the training evaluation?

Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
○	○	○	○	○

30) When do you think your training should be evaluated?

- ☐ At the end of each training module
- ☐ At the end of the training programme
- ☐ After a specific period following the completion of the training

***31)** The current practice of evaluating the training?

- ☐ At the end of each training module
- ☐ At the end of the training programme
- ☐ After a specific period following the completion of the training

32) To what extent do you think the training evaluation would improve if the following processes were considered?

	No improvement 1	Slight improvement 2	Significant improvement 3	Very significant improvement 4
Re-establish the method to assess the application of knowledge and skills learned following the training	○	○	○	○
Include your line manager, training manager and the trainer to evaluate the training	○	○	○	○
Reconsider the stages when competence should be assessed	○	○	○	○

Thank you for your significant contribution to this survey

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Sheffield Hallam University

Centre for Built Environment

QUESTIONNAIRE FOR SENIOR MANAGERS (CONSTRUCTION MANAGERS, TRAINING MANAGERS, PROJECT MANAGERS 0R CONTRACT MANAGERS)

The questionnaire aims assess the site management training provided to site managers within the construction industry.

***Preamble**: Kindly note that the term 'site manager' used within this questionnaire also include the personnel in-charge of managing the construction production process at the project site.*

1) The position held in your organisation:

- ○ Training Manager
- ○ Quality Manager
- ○ Project Manager
- ○ Contracts Manager
- ○ Construction Manager
- ○ Section Manager
- ○ Other

2) Your Firm Employs:

- ○ Less than 13 full-time staff
- ○ Between 14-49 full-time staff
- ○ Between 50-249 full-time staff
- ○ More than 250 full-time staff

3) The type/s of construction projects undertaken by your firm:

- ☐ New building work
- ☐ Existing building work (refurbishment, upgrading, alteration, preservation work, etc.
- ☐ Non-building work (civil engineering, fabricating work, etc.)

4) The type of site management training provided to your site managers:

- ○ Exclusive company in-house training
- ○ Company in-house training provided in association with recognised industry level training (CIOB or NVQ/SVQ)
- ○ Industry level training provided by CIOB or NVQ/SVQ
- ○ Other

5) The name of the site management training provided to your site managers:

- ☐ CIOB Certificate in Site Management
- ☐ CIOB Diploma in Site Management
- ☐ NVQ/SVQ Construction Site Supervision
- ☐ NVQ/SVQ Construction Site Management
- ☐ Other

6) The equivalent NVQ/SVQ site management qualification/s attained from the training:

- ☐ NVQ/SVQ Level 2
- ☐ NVQ/SVQ Level 3
- ☐ NVQ/SVQ Level 4
- ☐ NVQ/SVQ Level 5
- ☐ None of the above

7) What do you consider to be the important objectives of training your site managers?

	Not important 1	Fairly important 2	Important 3	Very important 4
Meeting the needs of their job (managing all construction resources, help achieve project objectives, sundry and administrative duties, and responsibilities to third parties, etc.)	○	○	○	○
Supporting their career development needs (continuing education, professional development, salary, promotion, job enrichment, etc.)	○	○	○	○
Fulfilling the needs of the organisation (current and future projects or contracts, organisational expansion, diversification, developing technology, etc.)	○	○	○	○
Adhering to the requirements of the industry and authorities (health and safety, environment, the Construction Skills Certification Scheme (CSCS), etc.)	○	○	○	○

8) How do you rate the the training provided in meeting your site managers' following needs?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Their job needs	○	○	○	○	○

Supporting their career development needs	○	○	○	○	○
Fulfilling the employer's/organisational needs	○	○	○	○	○
Adhering to the requirements of the industry and authorities	○	○	○	○	○

9) How do you rate the importance for your site managers to be able to manage the following following construction resources in their job:

	Not important 1	Fairly important 2	Important 3	Very important 4
Plant	○	○	○	○
Labour	○	○	○	○
Materials	○	○	○	○
Staff	○	○	○	○
Sub-contractors	○	○	○	○

10) How do you rate the importance for your site managers to be able to assist achieve the following project objectives:

	Not important 1	Fairly important 2	Important 3	Very important 4
Time	○	○	○	○
Cost	○	○	○	○
Quality	○	○	○	○
Health & Safety	○	○	○	○
Environment	○	○	○	○

11) How do you rate the importance for your site managers to be able to undertake the following sundry and administrative duties in their job:

	Not important 1	Fairly important 2	Important 3	Very important 4
Surveying works (setting-out, lines and levels, benchmarks, signages, etc.)	○	○	○	○
Administrative works (maintain site diaries, checking drawings, maintaining records, filing,	○	○	○	○

correspondence, etc.)					
Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, site mobilisation, etc.)	○	○	○	○	

12) How do you rate the importance for your site managers to be responsible to the following Third Parties in construction projects:

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Plant	○	○	○	○	○
Labour	○	○	○	○	○
Materials	○	○	○	○	○
Staff	○	○	○	○	○
Sub-contractors	○	○	○	○	○

13) How do you rate the effectiveness of the training provided in developing your site managers to manage the following resources?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Plant	○	○	○	○	○
Labour	○	○	○	○	○
Materials	○	○	○	○	○
Staff	○	○	○	○	○
Sub-contractors	○	○	○	○	○

14) How do you rate the effectiveness of the training provided in developing your site managers to assist achieve the following project objectives?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Time	○	○	○	○	○
Cost	○	○	○	○	○
Quality	○	○	○	○	○

Health & Safety	○	○	○	○	○
Environment	○	○	○	○	○

15) How do you rate the effectiveness of the training provided in assisting your site managers to undertake the following sundry and administrative duties?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Surveying works (setting-out, lines and levels, benchmarks, signages, etc.)	○	○	○	○	○
Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondence, etc.)	○	○	○	○	○
Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)	○	○	○	○	○

16) How do you rate the effectiveness of the training in training your site managers their responsibilities to the following Third Parties in construction projects?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Authorities (local authorities, police, public)	○	○	○	○	○
Main Contractor	○	○	○	○	○
Clients, consultants and/or the design team	○	○	○	○	○

17) To what extent do you consider the following support for the site managers training at the industry level would be significant in improving the training provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very significanmt 4
Make the training a minimum requirement of staff development programme	○	○	○	○
Provisions for compulsory training days/year	○	○	○	○

18) To what extent do you consider the following support for the site manager's training by the employer would be important to improve the training provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very significant 4

Allowance to attend training	○	○	○	○
Paid leave for training	○	○	○	○
Logistics support for training	○	○	○	○
Sponsorship/support for continuing education/training	○	○	○	○
Job enrichment	○	○	○	○
Pay increase upon completion of training	○	○	○	○
Bonus for passing the training	○	○	○	○
Promotion following the completion of training	○	○	○	○

19) To what extent do you consider the following support for the site manager's professional development would be significant to improve the training provisions?

	Not significant 1	Fairly Significant 2	Significant 3	Very significant 4
Support for professional membership	○	○	○	○
Support for Continuing Professional Development (CPD)	○	○	○	○

20) How would you rate the effectiveness of the following training approaches in developing site management competency?

(*Structured training in the answers below refers to formal training with a specific training curriculum conducted by selected trainers/peers during the training session, while modular training refers to the modules for training the key site management knowledge/skills*)

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Structured and modular off-the-job and on-the-job training	○	○	○	○	○
Non-structured but modular off-the-job and on-the-job training	○	○	○	○	○
Structured and modular on-the-job only training	○	○	○	○	○
Non-structured but modular off-the-job only training	○	○	○	○	○

21) How do you rate the accuracy of the training provided in identifying your site managers training needs?

Poor 1	Below average 2	Average 3	Above average 4	Excellent 5

○	○	○	○	○

22) To what extent do you consider the following approaches would be significant to improve identify your site managers training needs?

	Insignificant 1	Fairly significant 2	Significant 3	Very significant 4
Take into account the collective needs of their career, the project and the organisation	○	○	○	○
Involve their line manager and/or training manager when identifying the training needs	○	○	○	○
Identify their performance gap by mapping their present knowledge and skill against the performance required at the job	○	○	○	○
Consider feedback from previous training evaluation	○	○	○	○

23) How do you rate the design of the training provided to your site managers against the following?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Matching the training to the project operations	○	○	○	○	○
Adaptibility of the training to the project management style	○	○	○	○	○
The off-site training provision	○	○	○	○	○
The on-site training provision	○	○	○	○	○
The assessment of competency	○	○	○	○	○
Promoting innovation to current practices	○	○	○	○	○

24) To what extent do you consider the training would improve if more of the following training methods were adopted during training?

	No improvement 1	Slight improvement 2	Significant improvement 3	Very significant improvement 4
Case-studies	○	○	○	○
Role play	○	○	○	○
Lectures	○	○	○	○

Group discussions	○	○	○	○
Presentations	○	○	○	○
Combine use of the above range of training methods	○	○	○	○

25) How do you rate the effectiveness of the training evaluation?

- ☐ At the end of each training module
- ☐ At the end of the training programme
- ☐ After a specific period following the completion of the training

27) The current practice of evaluating the training?

- ☐ At the end of the each training module
- ☐ At the end of the training programme
- ☐ After a specific period following the completion of the training

28) To what extent do you think the training evaluation would improve if the following processes were considered?

	No improvement 1	Slight improvement 2	Significant improvement 3	Very significant improvement 4
Re-establish a clearer method to assess the application of knowledge and skills learned following the training	○	○	○	○
Include the site manager's line manager, training manager and the trainer to evaluate the training	○	○	○	○
Reconsider the stages when competence should be assessed	○	○	○	○

Thank you for your significant contribution to this survey

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Sheffield Hallam University
Centre for Built Environment

QUESTIONNAIRE FOR SITE MANAGEMENT TRAINING ORGANISATIONS/COLLEGES

The questionnaire aims assess the site management training provided to site managers within the construction industry.

***Preamble**: Kindly note that the term 'site manager' used within this questionnaire also include the personnel in-charge of managing the construction production process at the project site.*

1) The type of site management training/course that you offer:

- ☐ Exclusive company in-house training
- ☐ Company in-house training provided in association with recognised industry level training (CIOB or NVQ/SVQ))
- ☐ Industry level training provided by CIOB or NVQ/SVQ
- ☐ Other

2) The name/s of the site management training/course:

- ☐ CIOB Certificate in Site Management
- ☐ CIOB Diploma in Site Management
- ☐ NVQ/SVQ Construction Site Supervision
- ☐ NVQ/SVQ Construction Site Management
- ☐ Other

3) The equivalent NVQ/SVQ site management qualification attained from the training:

- ☐ NVQ/SVQ Level 2
- ☐ NVQ/SVQ Level 3
- ☐ NVQ/SVQ Level 4
- ☐ NVQ/SVQ Level 5
- ☐ None of the above

4) What do you consider to be the important objectives of training site managers?

	Not important 1	Fairly important 2	Important 3	Very important 4
Meeting the needs of their job (managing all construction resources, help achieve project objectives, sundry and administrative duties, responsibilities to third parties, etc.)	○	○	○	○

Supporting their career development needs (continuing education, professional development, salary, promotion, job enrichment, etc.)	○	○	○	○
Fulfilling the needs of their organisation (current and future projects or contracts, organisational expansion, diversification, developing technology, etc.)	○	○	○	○
Adhering to the requirements of the industry and authorities (health and safety, environment, the Construction Skills Certification Scheme (CSCS), etc.)	○	○	○	○

5) How do you rate the training/course provided in meeting the following needs?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
The site managers job needs	○	○	○	○	○
Supporting the site managers career development needs	○	○	○	○	○
Fulfilling the site managers employer's/organisational needs	○	○	○	○	○
Adhering to the requirements of the industry and authorities	○	○	○	○	○

6) How do you rate the importance for site managers to be able to manage the following following construction resources in their job:

	Not important 1	Fairly important 2	Important 3	Very important 4
Plant	○	○	○	○
Labour	○	○	○	○
Materials	○	○	○	○
Staff	○	○	○	○
Sub-contractors	○	○	○	○

7) How do you rate the importance for site managers to be able to assist projects achieve the following objectives:

	Not important 1	Fairly important 2	Important 3	Very important 4
Time	○	○	○	○
Cost	○	○	○	○
Quality	○	○	○	○
Health & Safety	○	○	○	○
Environment	○	○	○	○

8) How do you rate the importance for site managers to be able to undertake the following sundry and administrative duties in their job:

	Not important 1	Fairly important 2	Important 3	Very important 4
Surveying works (setting-out, lines and levels, benchmarks, signages, etc.)	○	○	○	○
Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondence, etc.)	○	○	○	○
Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, site mobilisation, etc.)	○	○	○	○

9) How do you rate the importance for site managers to be responsible to the following Third Parties in construction projects:

	Not important 1	Fairly important 2	Important 3	Very important 4
Authorities (local authorities, police, public, etc.)	○	○	○	○
Main Contractor	○	○	○	○
Clients, consultants and/or the design team	○	○	○	○

10) How do you rate the effectiveness of the training/course in developing site managers to manage the following resources:

Poor 1	Below average	Average 3	Above average	Excellent 5

		2		4	
Plant	○	○	○	○	○
Labour	○	○	○	○	○
Materials	○	○	○	○	○
Staff	○	○	○	○	○
Sub-contractors	○	○	○	○	○

11) How do you rate the effectiveness of the training/course in developing site managers to assist achieve the following project objectives:

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Time	○	○	○	○	○
Cost	○	○	○	○	○
Quality	○	○	○	○	○
Health & Safety	○	○	○	○	○
Environment	○	○	○	○	○

12) How do you rate the effectiveness of the training/course in developing site managers to undertake the following sundry and administrative duties:

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Surveying works (setting-out, lines and levels, benchmarks, signages, etc.)	○	○	○	○	○
Administrative works (maintain site diaries, checking drawings, maintaining records, filing, correspondence, etc.)	○	○	○	○	○
Pre-construction works (site inspection, designing site layout, forecasting and scheduling resources, planning for meetings, temporary buildings, site mobilisation, etc.)	○	○	○	○	○

13) How do you rate the effectiveness of the training/course in training site managers their responsibilities to the following Third Parties:

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Authorities (local authorities, police, public)	○	○	○	○	○
Main Contractor	○	○	○	○	○
Clients, consultants and/or the design team	○	○	○	○	○

14) To what extent do you consider the following support for the site managers training at the industry level would be significant for improving the training provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very significant 4
Make the training a minimum requirement of staff development programme	○	○	○	○
Provisions for compulsory training days/year	○	○	○	○

15) To what extent do you consider the following support by the employer would be significant for improving the training provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very Significant 4
Allowance to attend training	○	○	○	○
Paid leave for training	○	○	○	○
Logistics support for training	○	○	○	○
Sponsorship for training	○	○	○	○
Job enrichment	○	○	○	○
Pay increase following completion of training	○	○	○	○
Bonus for passing training	○	○	○	○
Support for continuing education/training	○	○	○	○

16) To what extent do you consider the following support for the site managers professional development would be significant for improving the training/course provisions?

	Not significant 1	Fairly significant 2	Significant 3	Very significant 4
Support for professional membership	○	○	○	○
Support for Continuing Professional Development (CPD)	○	○	○	○

17) How would you rate the effectiveness of the following training/course approaches in developing site management competency?

(Structured training in the answers below refers to formal training with a specific training curriculum conducted by selected trainers/peers during the training session, while modular training refers to the modules for training key site management knowledge/skills)

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Structured and modular off-the-job and on-the-job training	○	○	○	○	○
Nob-structured but modular off-the-job training and on-the-job training	○	○	○	○	○
Structured and modular on-the-job only training	○	○	○	○	○
Non-structured but modular off-the-job only training	○	○	○	○	○

18) How do you rate the accuracy of the training/course offered in identifying the site managers training needs?

Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
○	○	○	○	○

19) To what extent do you consider the following approaches would be significant to improve identify the site managers training needs?

	Insignificant 1	Fairly significant 2	Significant 3	Very significant 4
Take into account the collective needs of their career, the project and their organisational needs	○	○	○	○
Involve their line manager and/or training manager when identifying their training needs	○	○	○	○
Identify their performance gap by mapping their present	○	○	○	○

level of skill against the performance required for the job				
Consider feedback from previous training evaluation	○	○	○	○

20) How do you rate the design of the training/course against the following?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5
Matching the training to the project operations	○	○	○	○	○
Adaptability of the training to the project management style	○	○	○	○	○
The off-site training provision	○	○	○	○	○
The on-site training provision	○	○	○	○	○
The assessment of competency	○	○	○	○	○
Promotion of innovation to current practices	○	○	○	○	○

21) To what extent do you consider the training/course would improve if more of the following training methods were adopted during the training/course?

	No improvement 1	Slight improvement 2	Significant improvement 3	Very significant improvement 4
Case-studies	○	○	○	○
Role-play	○	○	○	○
Lectures	○	○	○	○
Group discussions	○	○	○	○
Presentations	○	○	○	○
Combine use of the above range of training methods	○	○	○	○

22) How do you rate the effectiveness of the evaluation of the training/course?

	Poor 1	Below average 2	Average 3	Above average 4	Excellent 5

○ ○ ○ ○ ○

23) When do you think the training/course should be evaluated?

- ☐ At the end of each training module
- ☐ At the end of the training programme
- ☐ After a specific period following the completion of the training

24) The current practice of evaluating the training/course?

- ☐ At the end of each training module
- ☐ At the end of the training programme
- ☐ After a specific period following the completion of the training

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25) To what extent do you think the training/course evaluation would improve if the following processes were considered?

	No improvement 1	Slight Improvement 2	Significant improvement 3	Vary significant improvement 4
Re-establish the method to assess the application of knowledge and skills learned following training	○	○	○	○
Include their line manager, training manager and trainer to evaluate their training	○	○	○	○
Reconsider the stages when competence should be assessed	○	○	○	○

Thank you for your significant contribution to this survey

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DRAFT INTERVIEW FORMAT

QUESTIONS

Theme 1: DIFFERENCES IN THE PERCEPTION OF THE OBJECTIVES OF TRAINING

Thank you for your willingness to participate and be interviewed. I have been researching the training needs of site managers and I found that site managers, their employers and training/course providers tend to have different perceptions on the objectives of training.

This could be the cause for the difficulty in getting better participation to the site management training offered at the industry level

- Do you agree that resolving the different perceptions would contribute to more effective training of site managers?
- Do you have this problem in the training site managers within your organisation?

For the training to be effective, it must be able to:

(i) meet the needs of the job

(ii) meet the needs of the site managers' career development

(iii) fulfill the needs of the organization

(iv) adhere to the requirements of the industry

- Do you think this balance can be achieved within the current training provisions:
  - (i) Within the organization?
  - (ii) Do you know of any other construction organizations have successfully achieved this?
  - (iii) Do you think this is possible for the whole industry?
  - (iv) If yes, how?
  - (v) If no, what are the obstacles?

A) IMPROVING THE CIOB C/DSM AND CITB SM/SS TRAINING PROVISIONS FOR TRAINING SITE MANAGERS

B1) GENERAL QUESTIONS

- Does your organization provide or subscribe to the CIOB C/DSM and/or NVQ/SVQ SM/SS training?

If yes:

- What mode is the training offered to your site managers? (In-house or industry-level training)

- Are you satisfied with the training?
- Dou you have any comments about the training?
- Why?

If no:

- Are you familiar with any of the training?
- Which one?
- Do you have any comments about the training?
- Why?

B2) SUPPORT FOR THE SITE MANAGERS' CAREER DEVELOPMENT NEEDS

The research found that the attainment of professional membership, continuing education and/or training and support for training were considered the important elements for supporting the site managers' career development needs.

Can you suggest how the following approaches can be introduced or enhanced within the training to better meet the site managers' career development needs?

(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

The approaches propositioned:

a. *Professional Development:*

- Continuing education/CPD at the industry level (professional development)?
- Support for professional membership?

b. *Employment*

- What do you think of the ides of making the training a (minimum) requirement of staff development programme?
- Ditto better provision for continuing education/training (employment)?
- Ditto providing the following incentives:
  - (i) allowance to attend training?
  - (ii) job enrichment?
  - (iii) paid leave to attend training?
  - (iv) logistic support for the training?
  - (v) bonus for passing training

c. *For the training at the industry level*

- training as a requirement of staff development programme?
- compulsory training days/year?

- There were some differences in the perception of the importance of *job enrichment* and *paid leave to attend training* between the site managers, the employers and training/course providers. How do you suggest this can be resolved?

B3) IMPROVING THE ACCURACY OF THE TRAINING NEEDS ANALYSIS (TNA)

(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

- Can you suggest how the collective needs of the site manager's career development needs, the project's and the organization's needs can be collectively considered during TNA?
- How do you think the line manager and/or the training manager can be involved when identifying the training needs?
- How do you think the site manager's present level of knowledge and skills can be mapped against the performance required at the job?
- Do you consider feedback from previous training evaluation in TNA's?
- If you can, how do you think that this can be best undertaken?

For CIOB C/DSM training

- There were some differences in the perception of the importance of considering *the collective needs of the site managers, projects and organisations* between the site managers, the employers and training/course providers. How do you suggest this can be resolved?

For NVQ/SVQ SM/SS training

- There were some differences in the perception of the importance of *considering mapping the present knowledge and skills against performance required at the job* between the site managers, the employers and training/course providers. How do you suggest this can be resolved?

B4) EXPANDING THE TRAINING DESIGN

CIOBC/DSM training

- How do you suggest the current training can be made more adaptable to the project management style?
- How can promotion of innovation to the current practices be introduced to the training?
- The on-site training is currently undertaken quite 'loosely' with the trainee site manager only required to produce evidence of their training through portfolios based on the modules that they undertake. How do you suggest that this can be improved?

- Similarly the off-site training provision is conducted at centres which may be at the project sites (for in-house training) or at training centres/colleges through facilitators. What can be considered to further improve this provision?
- The current competency after training is assessed through portfolio submissions. How do you think this can be further improved to more accurately assess competency following the training?
- How do you suggest the differences in the perception for the importance of the assessment of competency, and the on-site training provisions between the site managers, the employers and training/course providers can be resolved?

NVQ/SVQ SM/SS training

- Different project operates with within different project management styles. How do you suggest the current training can be made more adaptable to the project management style?
- The current training operates on specified modules which may or may not be concurrent with the project operations. How do you suggest the current training can be made more adaptable to the project operations?
- How can promotion of innovation to the current practices be introduced to the training?
- The on-site training is currently undertaken quite 'loosely' with the trainee site manager only required to produce evidence of their training through portfolios based on the modules that they undertake. How do you suggest that this can be improved?
- Similarly the off-site training provision is conducted at centres which may be at the project sites (for in-house training) or at training centres/colleges through facilitators. What can be considered to further improve this provision?
- The current competency after training is assessed through portfolio submissions. How do you think this can be further improved to more accurately assess competency following the training?
- How do you suggest the differences in the perception for the importance of the *on-site training provisions, the off-site training provisions* and *the promotion of innovation to current practices* between the site managers, the employers and training/course providers be resolved?

B5) EXPANDING THE TRAINING METHODS

(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

- How do you think more *group discussions* be introduced to the training?
- Similarly, how do you think *more combined use of different training methods* can be introduced to the training?

B5) EXPANDING THE APPROACH TO EVALUATE THE TRAINING

(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

- It was propositioned that to enhance the effectiveness of the training evaluation, the method to assess the application of knowledge and skills following the training needs to be re-established. How do you think that this can be achieved?
- What do you think should be evaluated?
- How do you think should be carried out?
- What are the stages when the evaluation should be carried out?
- How can the trainer, line manager and the training/course provider be involved in the evaluation?

For the NVQ/SVQ SM/SS training

- There were different perceptions between site managers, senior managers and training/course providers on the importance for including the line manager, training manager and the training/course provider to be involved to evaluate training. How do you suggest this can be resolved?

FINAL INTERVIEW FORMAT

Briefing:

- **Purpose of the interview**
- **Request the interviewee to refer to the handout provided**
- **Explain the structure of the interview**
- **Request the interviewee's permission to record the interview**
- **Brief the interviewee on the confidentiality of information provided**

QUESTIONS:

Thank you for your willingness to participate and be interviewed. I will start with some general questions.

A) **GENERAL QUESTIONS**

1. Do your site managers participate in the site management training offered by CIOB C/DSM and/or NVQ/SVQ SM/SS training?
2. Is it in-house or industry level training?

B. **DIFFERENCES IN THE PERCEPTION OF THE OBJECTIVES OF TRAINING**

Our research found that on the basis of best practice, for training to be effective, it must be able to:

(i) meet the needs of the job

(ii) meet the needs of the site managers' career development

(iii) fulfill the needs of the organization

(iv) adhere to the requirements of the industry

There is a tendency for site managers, employers and training/course providers to perceive the objectives training differently, particularly with meeting the site manager's development needs and to fulfill the needs of the organization. This could be one of the reasons that contribute to inhibit effective training..

- How do you think this difference be resolved?
- Do you think this approach can be adopted by other organisations?
- If yes, how?
- If no, what are the obstacles?
- Do you think this can be applied to the whole industry?
- If yes, how?
- If no, what are the obstacles?

C. IMPROVING THE CIOB C/DSM AND NVQ/SVQ SM/SS TRAINING PROVISIONS FOR TRAINING SITE MANAGERS

C1. SUPPORT FOR THE SITE MANAGERS' CAREER DEVELOPMENT NEEDS

For training to be more effective, support for site managers to achieve professional membership, and support for their continuing education and/or training is very important.

Can you suggest hoe the following can be applied or enhanced?

a. *Professional Development (at the professional level):*

The current training is recognized at NVQ Level 4 = Diploma/General Degree; & ACIOB.

- Do you think this is adequate as a continuing education/CPD?
- If not, what should be considered?
- Do you think this the current provisions are adequate in promoting site managers' education and training?

b. *Industry support for training*

Do you think any more can be done at the industry level to support:

- The training as a requirement of the site managers' development programme?
- The provision for a minimum training days/year?

c. By the employer

How do you think the employer can be encouraged to consider:

- Support for the site managers' continuing education/training?
- Allowance to attend training?
- Job enrichment?
- Paid leave to attend training?
- Logistic support for the training?
- Bonus for passing training?
- Payment of professional fees?

C2. ADOPTING BEST PROACTICE APPROACHES TO THE TRAINING PROCESS

(i) Improving the accuracy of the Training Needs Analysis (TNA)
(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

Principles for effective TNA:

- *specifying the needs precisely;*
- *identify the range/extent of training;*
- *how best training needs can be met.*

- What do you suggest can be done to consider the site managers' training needs at the person level, job level, organization level during TNAs?
- Ideally the trainees, trainer/employer and the training consultants should be involved during the TNA. On the practical level can this be achieved for the training? And how/why?
- What do you think is the best approach for this? (Some of the most common method used is observation, fact finding and interview)
- How do you think the line manager and/or the training manager can be more involved when identifying the training needs?
- How do you think feedback from previous training evaluation can be considered in TNA's?

(ii) Expanding the training design

(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

CIOBC/DSM training

The current training structure operates on structured modules with on-the-job and off-the-job training provisions. This could result in difficulty in adapting the training to different the project management styles.

- How do you suggest this can be improved?

The on-site training for both the training schemes is largely based on self-learning. (There could be a tendency for them to learn only what they are exposed to).

- What other ways do you think can be introduced to encourage the trainee to better learn through their job experience?
- Do you think more guided learning should be introduced?
- How do you suggest this can be carried out?
- Do you consider assigning a specific officer to the trainee site manager for this purpose will encourage better training outcomes?

The off-site training provision is usually conducted at centres (project sites for in-house training or at training centres/colleges). Facilitators at the centres conduct the modules during these sessions (Refer to Flowchart Fig. 5.9).

- What do you think should be the content of the off-site training provision?
- What can be done during these sessions to promotion/sharing of innovation to the current construction practices?
- What else can be introduced during this session to enhance the learning process?
- Do you see the need for any other party to be involved?
- If yes, who and why?
- What do you think should be the optimum size of the class or groups?
- Facilitator/student ratio?
- The length of the session?

NVQ/SVQ SM/SS training

The current training operates largely on a structured modular but off-the job only training with relatively little off-the-job (classroom) provision. The research found the common belief that a more structured on-the-job and off-the-job training element would be more effective for the training.

- How do you suggest this can be incorporated within the current training structure?

(iii) Expanding the training methods

(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

It was found that the combined use of different approach to the training would greatly enhance the training effectiveness (Lectures, case studies, group discussions etc.). *The trainees also meet together for a short period for the off-the-site training sessions (usually at the start of the training) before commencing with their on-site training.*

- How do you think more group discussions and/or the use of different training methods are encouraged:

  i. During the off-site training sessions?
  ii. During the on-site training sessions?

(iii) Expanding the approach to evaluate training

(For both the CIOB C/DSM and NVQ/SVQ SM/SS training)

The trainee site managers are required to produce evidence of their training in the form of portfolios submissions (coursework) as evidence of their competence.

- How do you think the application of knowledge and skills can be better assessed?

- How do you think the trainee's competence can be better assessed?
- What should be assessed?
- When?
- What do you think should be evaluated? (Portfolios, reports, evidence of competence?)
- Who do you think should do the evaluation?
- What are the stages you think the evaluation/s should be carried out?
- How can the trainer, line manager and the training/course provider be involved in the evaluation?

FINALLY:

There could be differences in the perceptions on the application of these approaches discussed between site managers, senior managers and training/course providers.

- How do you suggest this can be resolved?

Debriefing:

- **Mention important points learned**
- **Thank the interviewee and explain how the interview has been enriching**
- **Explain how the interview has contributed valuable insights to the points investigated**
- **Explain how the interview will be transcribed**